APPENDIX C

LABORATORY DATA VALIDATION REPORTS

C-1

URSGWC LABORATORY DATA VALIDATION REPORTS

FULL VALIDATION OF CHLORIDE DATA – 99G044 (EMAX)

This section describes the full data validation for twelve groundwater samples, which were analyzed for chloride by ion chromatography following USEPA Method 300.0. Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 99G044. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
MW-1	MW-4
MW-2	WC2-5S
WC2-3I	WC-3S
WC-14S	WC2-4S
FB0712	DW-4S2
WC5-1D	WC2-3S

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The narrative indicated no anomalies in the analysis of chloride.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of six (6) months for chloride. No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for chloride. The blank sample results were compared to the raw data and no transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. Initial calibration curves were established using three standards for chloride. The correlation coefficient for chloride was greater than 0.995 as required by the methodology. The ICV recoveries were within evaluation criteria of 90-110%R. One hundred percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). One hundred percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria, indicating that the instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS) were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required

based on LCS recoveries. One hundred percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

The laboratory analyzed sample MW-4 in duplicate to assess method precision at the time of analysis. Laboratory duplicate data for sample MW-4 were within evaluation criteria, therefore no qualification of the data was required. The duplicate RPD was recalculated and compared to the raw data; no transcription and calculation errors were noted.

Matrix Spike Sample (MS)

Matrix spike samples (MS) was analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory spiked and analyzed sample MW-4. MS recoveries for chloride were within the evaluation criteria, therefore no qualification of the data was required. The matrix spike recovery was recalculated and compared to the raw data; no transcription and calculation errors were noted.

Sample Result Verification

One hundred percent of chloride sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. One hundred percent of the data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. No samples in SDG 99G044 had elevated reporting limits for chloride.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF MERCURY DATA – 99G044 (EMAX)

This section describes the full data validation for twelve groundwater samples, which were analyzed for mercury by cold vapor atomic absorption spectrometry (CVAA) by USEPA Method 7471. Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 99G044. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
MW-1	MW-4
MW-2	WC2-5S
WC2-3I	WC-3S
WC-14S	WC2-4S
FB0712	DW-4S2
WC5-1D	WC2-3S

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The narrative indicated the MS/MSD recoveries were outside limits for mercury. This issue is addressed in the appropriate sections below.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of 28 days for mercury. No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for mercury. The blank sample results were compared to the raw data and no transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. Initial calibration curves were established using a blank and five standards for mercury (CVAA). The correlation coefficient for mercury was greater than 0.995 as required by the methodology. One hundred percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). Twenty-five percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria, indicating that the instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS) were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required

based on LCS recoveries. Twenty-five percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

Laboratory duplicate samples were not analyzed to assess method precision by the laboratory at the time of analysis. The laboratory analyzed the matrix spike samples in duplicate to assess precision. See following section for information.

Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix spike/matrix spike duplicate samples (MS/MSD) were analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory spiked and analyzed samples MW-4. MS/MSD recoveries for mercury were not within the evaluation criteria. The following table summarizes MS/MSD data not within evaluation criteria.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
MW-4	Mercury	**72/73**	75-125	1	20

The following table summarizes the qualifications made to the associated data based on outlying MS/MSD recoveries and RPDs.

Field ID	Analyte	WC Qual
MW-4	Mercury	UJ

One hundred percent of the MS/MSD recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted.

Sample Result Verification

Twenty-five percent of metal sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. Twenty-five percent of the data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. No samples in SDG 99G044 had elevated reporting limits for mercury.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF PCB DATA - EMAX SDG 99G044

This section describes the full validation for eleven groundwater samples which were analyzed for polychlorinated biphenyls (PCB) by EPA SW-846 Method 8082. The samples were analyzed by EMAX Laboratories of Torrance, California and submitted as part of SDG 99G044. Samples included as part of this validation are listed below:

MW-1	MW-2	MW-4	WC-3S	DW-4S2
WC2-3I	FB0712	WC2-5S	WC2-4S	WC2-3S
WC-14S	WC5-1D			

QA/QC criteria were established in Method 8082 and in the QAPP (URS Greiner Woodward Clyde 1998). Evaluation of the analytical data followed procedures outlined in the USEPA Contract Program National Functional Guidelines for Organic Data Review (USEPA 1994) where applicable to SW-846 Method 8082.

- Significant problems identified in the Laboratory Case Narrative
- Holding times
- Initial calibration
- Continuing calibration
- Method blank contamination
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Retention times
- Target compound identification and quantitation
- System performance and overall assessment of data
- Transcription errors

Problems Identified in the Laboratory Case Narrative

No problems were identified in the laboratory case narrative, which are not discussed in other sections of this Data Validation.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. Chain of Custody forms and Sample Receipt forms indicated that all samples were extracted within seven days of sample collection and analyzed within 40 days of sample extraction.

Initial Calibrations

Initial calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for PCB analyses. The initial

calibration for PCBs was done using a mixture of Aroclors 1016 and 1260 at five concentrations as outlined in Method 8082. Calibration factors (CFs) for three of the major peaks from Aroclor 1016 and from three of the major peaks from Aroclor 1260 were recalculated and no transcription or calculation errors were noted. The %RSD for each of the peaks was below the method criteria of 20 percent. Recalculations of the %RSD for both were performed, and no errors in calculation were noted.

In addition to the initial calibration, a second source verification standard was analyzed to help confirm the accuracy of the standard concentration used during the initial calibration. Review and recalculation of the continuing calibrations CFs from the raw data indicated that the CFs were calculated correctly. The percent differences (%Ds) between the second source verification standard CFs and the initial calibration mean CFs were recalculated to ensure that they met the evaluation criteria of < 15%. All of the CFs were within the 15% criteria, and no calculation or transcription errors were noted.

Continuing Calibration

Continuing calibrations were performed at the required frequency of every 12 hours of analysis and this SDG contains two continuing calibrations. Review and recalculation of the continuing calibrations CFs from the raw data indicated that the CFs were calculated correctly. The percent differences (%Ds) between the continuing calibration CFs and the initial calibration mean CFs were recalculated to ensure that they met the evaluation criteria of < 15 percent.

Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by Method 8082. All target compounds were reported as nondetect. Review of chromatograms indicated that no peaks were present. No data qualifications were required based on blank samples.

Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. All surrogate recoveries were within evaluation criteria with the exception of TCMX on the secondary column for sample WC-3S. Since all PCB data for sample WC-3S were reported nondetect (U), therefore no qualification of the data was required. Twenty-five percent of the recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

Sample MW-4 was analyzed as a MS/MSD sample to assess accuracy and precision for the analyses. The MS/MSD recoveries and RPDs were recalculated from the raw data and verified against the values presented on the QC summary form. No calculation or

transcription errors were noted, and all recoveries and RPD were within the evaluation criteria. No data qualification was required.

Laboratory Control Samples (LCS)

Laboratory Control Samples were analyzed with each analytical batch as required by Method 8082. The LCS contained Aroclors 1016 and 1260 at appropriate concentrations. Review of the LCS summary forms indicated all LCS recoveries were within evaluation criteria. All of the spiking compound recoveries for each LCS were recalculated, and no calculation or transcription errors were noted.

Target Compound Identification and Quantitation

No arochlors were detected in any of the field samples. Arochlor 1016 and 1260 concentrations in the LCS and MS/MSD were recalculated and compared to the raw data. No calculation or transcription errors were noted. No other target compounds were identified in any of the environmental samples. All chromatograms from both columns were examined and no substantial peaks (peaks 1/2 or greater the size of the low-level standard) were identified.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. MS/MSD, LCS and surrogate recoveries demonstrated that acceptable levels of accuracy and precision were achieved. In addition, completeness defined to be the percentage of analytical results, which are judged to be valid was 100 percent for this SDG.

FULL VALIDATION OF ANTIMONY DATA – 99G044 (EMAX)

This section describes the full data validation for twelve groundwater samples, which were analyzed for antimony by graphite furnace atomic absorption spectrometry (GFAA) by USEPA Method 7041. Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 99G044. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
MW-1	MW-4
MW-2	WC2-5S
WC2-3I	WC-3S
WC-14S	WC2-4S
FB0712	DW-4S2
WC5-1D	WC2-3S

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The narrative indicated no anomalies in the analysis of antimony.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of six (6) months for antimony. No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for antimony. The blank sample results were compared to the raw data and no transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. Initial calibration curves were established using a blank and five standards for antimony (GFAA). The correlation coefficient for antimony was greater than 0.995 as required by the methodology. The ICV recoveries were within evaluation criteria of 90-110%R. One hundred percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). Twenty-five percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria of 80-120%R, indicating that the instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS) were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required

based on LCS recoveries. Twenty-five percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

Laboratory duplicate samples were not analyzed to assess method precision by the laboratory at the time of analysis. The laboratory analyzed the matrix spike samples in duplicate to assess precision. See following section for information.

Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix spike/matrix spike duplicate samples (MS/MSD) were analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory spiked and analyzed samples MW-4. MS/MSD recoveries for antimony were within the evaluation criteria, therefore no qualification of the data was required. One hundred percent of the MS/MSD recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted.

Sample Result Verification

One hundred percent of antimony sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. One hundred percent of the data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. No samples in SDG 99G044 had elevated reporting limits for antimony.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF SVOC DATA - SDG 99G044

This section describes the full validation eleven investigative groundwater samples, one matrix spike/matrix spike duplicate sample and field blank sample which were analyzed for semivolatile organic compounds by EPA SW-846 Method 8270C. The samples were analyzed by EMAX Laboratories of Torrance, California and submitted as part of SDG 99G044. Samples included as part of this validation are listed below:

MW-1	MW-2	MW-4	WC-3S	DW-4S2
WC2-3I	FB0712	WC2-5S	WC2-4S	WC2-3S
WC-14S	WC5-1D			

QA/QC criteria were established in Method 8270C and in the QAPP (URS Greiner Woodward Clyde, 1998). Evaluation of the analytical data followed procedures outlined in the USEPA Contract Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994) where applicable to SW-846 Method 8270C.

Criteria evaluated included the following method performance criteria:

- Significant problems identified in the Laboratory Case Narrative
- Holding times
- GC/MS instrument performance
- Initial calibration
- Continuing calibration
- Method blank
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Internal Standard areas and retention times
- Target compound identification and quantitation
- Tentatively Identified Compounds (TICs)
- System performance and overall assessment of data
- Transcription errors

Problems Identified in the Laboratory Case Narrative

The laboratory case narrative indicated outlying LCS, surrogate and MS/MSD recoveries. The narrative also indicated that re-extraction of the samples was completed outside extraction holding time. These issues are addressed in the appropriate sections below. No additional problems were noted in the case narrative.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy,

consistency, and holding time compliance. Samples were initially extracted within 14 days of sample receipt and within 40 days of extraction. Some samples required re-extraction outside holding time and reanalysis. Sample qualification is summarized below:

Field ID	Analyte	Qual
MW-2RE	all SVOC compounds	J/UJ
WC2-3IRE	all SVOC compounds	J/UJ
FB0712RE	all SVOC compounds	J/UJ
WC2-5SRE	all SVOC compounds	J/UJ
WC2-4SRE	all SVOC compounds	J/UJ
WC2-3SRE	all SVOC compounds	J/UJ
WC-14SRE	all SVOC compounds	J/UJ
WC5-1DRE	all SVOC compounds	J/UJ

No further qualification of the SVOC data was required based on holding time issues.

Instrument Performance

GC/MS instrument performance checks were performed to ensure mass resolution, identification, and instrument sensitivity. Criteria for evaluation of instrument performance included possible transcription/calculation errors, adherence to instrument tuning frequency requirements, mass assignments, and ion abundance criteria. Instrument performance check samples were evaluated against criteria established in USEPA SW-846 Method 8270C.

Based on the raw data, the ion abundance criteria were within evaluation criteria for all masses, and no calculation or transcription errors were noted.

Initial Calibration

Calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for volatile analyses. An initial calibration was analyzed on 7-21-99 and 7-28-99. At least five concentration standards were used to establish the initial calibration curve as required by Method 8270C. For the initial calibration, the response factors (RFs) were reviewed and were greater than 0.05 for all analytes.

Review of the initial calibration summary forms indicated %RSDs were $\leq$ 30 percent for CCCs and non-CCCs with the exception of 4-nitrophenol for initial calibration 7-28-99. All SVOC data associated with the initial calibration of 7-28-99 was previously qualified estimated/estimated nondetect (J/UJ) based on holding times, therefore no additional qualification of data was required.

Recalculations of the RRFs and %RSD for four compounds per standard was performed, and no errors in calculation were noted.

Continuing Calibration

Review of the data indicated a CV was analyzed at the beginning of the analytical sequence, but was not analyzed at the end of the sequence or every 12 hours. Review of continuing calibration summary form indicated all RFs met the evaluation criteria of greater than 0.05 for SPCCs and non-SPCCs. In addition, percent differences (%Ds) met the evaluation criteria of $\leq$ 20 percent for CCCs and < 50 percent for all target analytes. Recalculations of the RF and %D for one compound per standard was completed, and no errors in calculation were noted.

Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8270C. All target compounds were reported as nondetect with the exception of bis(2-ethylhexyl) phthalate and diethyl phthalate for MBLK2W (extracted 7-24-99). Qualification of associated data is summarized below:

Field ID	Analyte	New RL	Qual
MW-2RE	bis(2-Ethylhexyl) phthalate	13.3	U
MW-2RE	Diethyl phthalate	19.7	U
WC2-3IRE	Diethyl phthalate	70.5	U
FB0712RE	Diethyl phthalate	20.7	U
WC2-5SRE	Diethyl phthalate	11.5	U
WC2-4SRE	bis(2-Ethylhexyl)phthalate	13.5	U
WC2-4SRE	Diethyl phthalate	24.2	U
WC2-3SRE	bis(2-Ethylhexyl)phthalate	70.4	U
WC2-3SRE	Diethyl phthalate	28	U
WC-14SRE	Diethyl phthalate	13.5	U
WC5-1DRE	bis(2-Ethylhexyl)phthalate	13.5	U
WC5-1DRE	Diethyl phthalate	24.1	U

Review of the chromatograms indicate all other peaks present were accounted or the concentrations reported were below the method detection limit.

Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. All surrogate recoveries were within the method acceptance criteria for the validated samples with the noted exceptions below:

Field ID	Surrogate	Recovery	Evaluation Criteria	Action
MW-2	Terphenyl-d15	31	42-126	None, one surrogate per fraction maybe outside criteria
WC2-3I	2-Fluorobiphenyl	31	43-125	None, one surrogate per fraction maybe outside criteria
FB0712	2-Fluorobiphenyl 2-Fluorophenol Nitrobenzene-d5 Phenol-d5	18 16 17 21	43-125 25-125 32-125 25-125	Qualify all compounds as **J/UJ**
WC2-5S	2-Fluorobiphenyl	38	43-125	None, one surrogate per fraction maybe outside criteria
WC2-4S	2-Fluorobiphenyl Terphenyl-d14	38 40	43-125 42-126	Qualify base fraction J/UJ
WC2-3S	2-Fluorobiphenyl Terphenyl-d14	41 24	43-125 42-126	Qualify base fraction J/UJ
WC5-1D	2-Fluorobiphenyl Terphenyl-d14	39 40	43-125 42-126	Qualify base fraction J/UJ
WC-14S	2-Fluorobiphenyl	39	43-125	None, one surrogate per fraction maybe outside criteria

Ten percent of the recoveries were recalculated and no calculation or transcription errors were noted.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples are analyzed to assess accuracy and precision for the analyses. Sample MW-4 was analyzed as an MS/MSD sample as part of this SDG. 2,4-dinitrophenol, 3,3'-dichlorobenzidine and hexachlorocyclopentadiene MS/MSD recoveries were outside evaluation criteria. Since Functional Guidelines indicates data should not be qualified on MS/MSD data alone, and associated QC parameters were within criteria, no qualification of data was required.

MS/MSD data were recalculated and confirmed using raw data. No transcription errors were noted. The laboratory properly calculated the MS and MSD recoveries but did not calculate the MS/MSD RPDs correctly. The laboratory was contacted and the data were properly re-calculated and re-submitted.

Internal Standards

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent, and the IS retention times must be within 30 seconds of the IS continuing calibration retention time. IS areas for all samples were within evaluation criteria.

Retention times for the samples in this SDG were within evaluation criteria. The raw data were verified, and no transcription errors were noted.

Laboatory Control Samples (LCS)

An LCS was analyzed to assess the accuracy of the analytical process. All LCS recoveries were within evaluation criteria with the exception of 3,3'-dichlorobenzidine, 4-nitroaniline, bis(2-chloroxy)methane, hexachlorocyclopentadiene and n-nitrosodiphenylamine. Associated data were qualified as estimated/estimated nondetect (J/UJ) for the original analysis for all samples in the SDG. LCS recoveries associated with the re-extracted and reanalysis data were within evaluation criteria.

Ten percent of the spiking compound recoveries for the LCS were recalculated using the LCS summary form, and no calculation or transcription errors were noted.

Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified, the spectra of the identified compounds were verified against the library spectra, and the relative retention time was no greater than 0.06 different from the associated continuing calibration retention times. No anomalies were noted with the identification of the target compounds in the samples.

For the validation of compound quantitation, ten percent of the detected results were recalculated from the raw data, and no calculation errors were noted. Additionally, the reporting limits were verified to determine if reporting limits were adjusted for dilutions. Review of the raw data indicated not all compounds were quantified using the closest internal standard as recommended in the method; however, the laboratory did select an internal standard which was close to the target analyte. No qualification of data was required.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Acceptable levels of accuracy and precision, based on MS/MSD, LCS, and surrogate data were achieved for this SDG. In addition, completeness, defined to be the percentage of analytical results which are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG and should be used for their intended purpose.

FULL VALIDATION OF CYANIDE DATA – 99G044 (EMAX)

This section describes the full data validation for twelve groundwater samples, which were analyzed for cyanide. Samples were analyzed following USEPA Method SW9010 Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 99G044. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
MW-1	MW-4
MW-2	WC2-5S
WC2-3I	WC-3S
WC-14S	WC2-4S
FB0712	DW-4S2
WC5-1D	WC2-3S

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The case narrative indicated that no anomalies were noted during the analyses.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of 14 days. No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for the analysis of cyanide, therefore no qualification of the data was required based on blank contamination. One hundred percent of the blank sample results were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. The initial calibration curve was established using a blank and six standards. The correlation coefficient for the calibration curve was greater than 0.995 as required by the methodology. One hundred percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). One hundred percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria, indicating that the instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS) were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation

criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required based on LCS recoveries. One hundred percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

Laboratory duplicate samples were analyzed with sample WC5-1D to assess method precision by the laboratory at the time of analysis. Laboratory duplicate samples were within evaluation criteria, therefore no qualification of data was required. One hundred percent of the duplicate data was recalculated and compared to the raw data; no transcription and calculation errors were noted.

Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix spike/matrix spike duplicate samples (MS/MSD) are analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory did not analyze any MS/MSDs with this batch since none were requested on the chain-of-custody.

Sample Result Verification

One hundred percent of the cyanide sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. The data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. No samples in SDG98K191 had elevated reporting limits for metals.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF METALS DATA – 99G044 (EMAX)

This section describes the full data validation for twelve groundwater samples, which were analyzed for metals. Samples were analyzed by inductively coupled plasma spectrometry (ICP) for aluminum, barium, beryllium, cadmium, calcium, chromium, cobalt copper, iron, magnesium, manganese, nickel, potassium, silver, sodium, vanadium, zinc; and by Trace ICP for arsenic, lead, selenium, and thallium following USEPA Method SW6010A. Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 99G044. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
MW-1	MW-4
MW-2	WC2-5S
WC2-3I	WC-3S
WC-14S	WC2-4S
FB0712	DW-4S2
WC5-1D	WC2-3S

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The case narrative indicated that the preparation blank was free of contamination but review of the data indicates that beryllium, calcium, iron, lead and zinc were detected in the method blanks above the MDL. The narrative indicated the MS/MSD recoveries were outside limits for aluminum, antimony, iron, magnesium, and manganese. These issues are addressed in the appropriate sections below.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of 6 months for other metals. No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for all metals with the exception of those listed in the following table:

Blank ID	Analyte	Conc. (mg/L)	Assoc. Samples
MBLK1W	Calcium	0.0388	All in SDG
	Magnesium	0.0342	
	Nickel	0.0052	
	Sodium	0.398	
	Zinc	0.00614	
ICB (ICP)	Silver	0.0062	None in SDG associated
CCB1 (ICP)	Aluminum	0.0340	None in SDG associated
	Beryllium	0.0001	
	Calcium	0.016	
	Magnesium	0.0435	
	Manganese	0.0007	
	Sodium	0.3982	
	Vanadium	0.0052	
CCB2 (ICP)	Aluminum	0.0278	None in SDG associated
	Beryllium	0.0001	
	Silver	0.0067	
	Sodium	0.3848	
CCB3 (ICP)	Beryllium	0.0001	99G044-001 thru –011
	Magnesium	0.0347	
	Sodium	0.5317	
CCB4 (ICP)	Beryllium	0.0001	99G044-001 thru -012
	Sodium	0.4783	
CCB5 (Trace)	Selenium	-0.00484	None in SDG associated
CCB1 ICP cal #2	Sodium	-0.0609	99G044-03,-12
CCB2 ICP cal #2	Sodium	-0.1219	99G044-03,-12

Qualifiers added to the data based on blank contamination are summarized below:

Field ID	Analyte	New RL (mg/L)	Qualifier
MW-2	Zinc	0.025	U
MW-1	Nickel	0.0043	U
	Zinc	0.0036	U
MW-4	Zinc	0.0081	U
DW-4S2	Zinc	0.029	U
WC2-3I	Nickel	0.026	U
FB0712	Calcium	0.012	U
	Sodium	0.59	U
	Zinc	0.01	U
WC2-5S	Zinc	0.0046	U
WC2-4S	Nickel	0.0043	U
	Zinc	0.0056	U
WC-14S	Nickel	0.0068	U
	Zinc	0.0065	U

All associated beryllium data were reported nondetect, therefore did not require qualification. All associated magnesium results were reported greater than 5 times the highest blank contamination result or nondetect; therefore, no further qualifications of data were required based on blank contamination. All sodium data were reported greater than 5 times the highest blank contamination result except for sample FB0712, which was qualified as summarized above. Twenty-five percent of the blank sample results were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. Initial calibration curves were established using a blank and three standards for ICP; and a blank and six standards for Trace ICP. Twenty-five percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). Twenty-five percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria, indicating that the instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required based on LCS recoveries. Twenty-five percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

Laboratory duplicate samples were not analyzed to assess method precision by the laboratory at the time of analysis. The laboratory analyzed the matrix spike samples in duplicate to assess precision. See following section for information.

Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix Spike/Matrix Spike Duplicate samples (MS/MSD) were analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory spiked and analyzed sample MW-4. MS/MSD recoveries were all within the evaluation criteria with the exception of calcium, magnesium, manganese and sodium,. The following table summarizes MS/MSD data not within evaluation criteria.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
MW-4	Calcium	**57**/92	80-120	11	20
MW-4	Magnesium	**42**/91	80-120	8	20
SB22A1-3A	Manganese	**45**/90	80-120	10	20
SB22A1-3A	Sodium	**-285/52**	80-120	9	20

The following table summarizes the qualifications made to the associated data based on outlying MS/MSD recoveries and RPDs.

Field ID	Analyte	WC Qual
MW-4	Calcium	J
MW-4	Magnesium	J
MW-4	Manganese	J

Sodium concentrations in the sample were greater than 5X the associated spike concentration, therefore no qualification of the sodium data was required. Twenty-five percent of the MS/MSD recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted.

Sample Result Verification

Twenty-five percent of the data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. The following samples in SDG 99G044 had elevated reporting limits for metals:

Sample Identification #	Sample Identification #
WC2-3I	WC-3S
WC2-3S	DW-4S2
WC5-1D	

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF VOC DATA - SDG 99G044

This section describes the full data validation for the volatile organic compound (VOC) data for twelve investigative groundwater samples, one matrix spike/matrix spike duplicate sample and field blank sample which were analyzed by EMAX Laboratories (Torrance, CA). All samples were analyzed following EPA SW-846 Methods 5030/8260B. The validated samples in SDG 99G044 are listed below:

MW-1	MW-2	MW-4	WC-3S	DW-4S2
WC2-3I	FB0712	WC2-5S	WC2-4S	WC2-3S
WC-14S	WC5-1D	TB0713		

QA/QC criteria used during the data validation were those criteria established in USEPA SW-846 Method 8260B and in the Quality Assurance Project Plan (QAPP) (W-C 1998). Criteria evaluated included the following method performance criteria:

- Significant problems identified in the Laboratory Case Narrative
- Holding times
- GC/MS instrument performance
- Initial and continuing calibration
- Method blank contamination
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Internal Standard areas and retention times
- Target compound identification and quantitation
- System performance and overall assessment of data
- Transcription errors

Problems Identified in the Laboratory Case Narrative

The laboratory case narrative indicated that methylene chloride for the LCS (VOG1202C) was outside recovery criteria. The narrative also indicates some surrogate and MS/MSD recoveries were outside evaluation criteria. The narrative indicates that all QC requirements were met with the exception of those listed above. These issues are addressed in the appropriate sections below.

The narrative also indicated VOA vials for samples MW-2, MW-4, DW-4S2, WC5-1D and TB0713 had air bubbles present. In all cases, at least one vial was available for analysis, which contained no air bubbles. The narrative indicated that sample WC2-4S did not have a sampling time listed on the chain-of-custody (COC) and that no analyses were requested for the sample on the COC. A revised COC was received 07-15-99 for URSGWC which included sampling time and requested analyses. The narrative also indicated that a single VOA vial for the analysis of VOCs was received broken by the laboratory for sample WC2-4S. Two other vials for sample WC2-4S were received and used for analysis of VOCs. No additional problems were noted in the laboratory case narrative.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. Review of the COCs indicated that all samples were analyzed within 14 days of collection with the exception of the dilution analysis of sample WC2-3S. The dilution analysis data for sample WC2-3S were qualified estimated/estimated nondetect (J/UJ) based on the missed holding time. The sample checklist indicates that the coolers used for samples in this SDG were received at $4^{\circ}C \pm 2^{\circ}C$.

Instrument Performance

GC/MS instrument performance checks were performed to ensure mass resolution, identification, and instrument sensitivity. Criteria for evaluation of instrument performance included possible transcription/calculation errors, adherence to instrument tuning frequency requirements, mass assignments, and ion abundance criteria. Instrument performance check samples were evaluated against criteria established in USEPA SW-846 Method 8260B.

Based on the raw data, the ion abundance criteria were within evaluation criteria for all masses, and no calculation or transcription errors were noted.

Initial and Continuing Calibration

Initial and continuing calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for VOC analyses. Initial calibrations were analyzed at the required frequency. For the initial and continuing calibrations, the relative response factors (RRFs) were reviewed and were greater than 0.10 for chloromethane, 1,1-dichloroethane and bromoform; greater than 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane; and greater than 0.05 for all other analytes.

For the initial calibrations, at least five standards were used as required by USEPA SW-846 Method 8260B. Review of the initial calibration summary forms indicated %RSDs were $\leq$ 30 percent for CCCs and < 15 percent for non-CCCs with the exception of the following:

Calibration Date	Instrument ID	Analyte	% RSD	Comments
07-23-99	T-002	Chloroethane	25.1	qualified associated data estimated
07-23-99	T-002	Acetone	26.7	qualified associated data estimated
07-23-99	T-002	Methylene chloride	17.2	qualified associated data estimated
07-23-99	T-002	Vinyl Acetate	20.4	qualified associated data estimated
07-23-99	T-002	2-butanone	26.3	qualified associated data estimated
07-23-99	T-002	Bromochloromethane	16.7	qualified associated data estimated
07-23-99	T-002	M/p- Xylenes	17.4	qualified associated data estimated

Recalculations of the RRFs and %RSD for four compounds per standard was performed, and no errors in calculation were noted.

Continuing calibrations were performed at the required frequency. Review of continuing calibration summary form indicated all RRFs met the evaluation criteria of greater than 0.10 (chloromethane, 1,1-dichloroethane and bromoform), 0.30 (chlorobenzene and 1,1,2,2-tetrachloroethane) and greater than 0.05 for all other analytes. In addition, percent differences (%Ds) met the evaluation criteria of $\leq$ 20 percent for CCCs and < 50 percent for all target analytes. Recalculations of the RRF and %RSD for four compounds per standard was completed, and no errors in calculation were noted.

Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8260B. All target compounds were reported as nondetect in the associated method blank samples and the field blank sample (FB0712). Trichloroethene (0.41 ug/L) was detected in the trip blank sample (TB0713) submitted with the samples in this SDG.

Qualification of trichloroethene data required is summarized in the following table:

Field I.D.	Analyte	Concentration (µg/L)	Qualifier	Comment
MW-4	TCE	0.32	U	Trip blank contamination
WC-3S	TCE	0.32	U	Trip blank contamination
DW-4S2	TCE	0.3	U	Trip blank contamination
WC2-3S	TCE	0.67	U	Trip blank contamination

No further qualification of the data was required based on blank contamination. Review of the chromatograms indicate all peaks present were accounted.

Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. All surrogate recoveries were within the method acceptance

criteria for the validated samples with the exception of bromofluorobenzene (129%R) for sample WC2-3S (dilution). Chlorobenzene (32 ug/L) and chloroethane (320 ug/L) were the only compounds detected in the sample and therefore were qualified as estimated (J) based on surrogate recoveries. Ten percent of the recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples were analyzed to assess accuracy and precision for the analyses. Sample MW-4 was analyzed as MS/MSD samples with this SDG. The MS/MSD recoveries and RPDs were within the evaluation criteria with the exception of acetone and bromomethane. As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Ten percent of the MS/MSD recoveries and RPD values were recalculated from the raw data, and no calculation errors were noted.

Internal Standards

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent, and the IS retention times must be within 30 seconds of the IS continuing calibration retention time. IS areas and retention times for the samples in this SDG were within evaluation criteria. The summary forms were verified to the raw data, and no transcription errors were noted.

Laboatory Control Samples (LCS)

Analysis of an LCS was completed with each analytical batch as required by USEPA SW-846 Method 8260B. The LCS contained the all target analytes. All LCS data were within evaluation, therefore no qualification of the data was required.

Ten percent of the spiking compound recoveries for the LCS were recalculated, and no calculation or transcription errors were noted.

Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified, the spectra of the identified compounds were verified against the library spectra, and the relative retention time was no greater than 0.06 different from the associated continuing calibration retention times. No anomalies were noted with the identification of the target compounds in the samples.

For the validation of compound quantitation, fifty percent of the detected results were recalculated from the raw data, and no calculation errors were noted. Additionally, the reporting limits were verified to determine if reporting limits were adjusted for dilutions.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Acceptable levels of accuracy and precision, based on MS/MSD, LCS, and surrogate data were achieved for this SDG. In addition, completeness, defined to be the percentage of analytical results which are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG. Qualification of data was not needed for any of the target compounds detected above the reporting limit in this SDG.

FULL VALIDATION OF CYANIDE DATA – 99G044 (EMAX)

This section describes the full data validation for twelve groundwater samples, which were analyzed for cyanide. Samples were analyzed following USEPA Method SW9010 Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 99G044. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
MW-1	MW-4
MW-2	WC2-5S
WC2-3I	WC-3S
WC-14S	WC2-4S
FB0712	DW-4S2
WC5-1D	WC2-3S

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The case narrative indicated that no anomalies were noted during the analyses.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of 14 days. No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for the analysis of cyanide, therefore no qualification of the data was required based on blank contamination. One hundred percent of the blank sample results were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. The initial calibration curve was established using a blank and six standards. The correlation coefficient for the calibration curve was greater than 0.995 as required by the methodology. One hundred percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). One hundred percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria, indicating that the instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS) were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation

criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required based on LCS recoveries. One hundred percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

Laboratory duplicate samples were analyzed with sample WC5-1D to assess method precision by the laboratory at the time of analysis. Laboratory duplicate samples were within evaluation criteria, therefore no qualification of data was required. One hundred percent of the duplicate data was recalculated and compared to the raw data; no transcription and calculation errors were noted.

Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix spike/matrix spike duplicate samples (MS/MSD) are analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory did not analyze any MS/MSDs with this batch since none were requested on the chain-of-custody.

Sample Result Verification

One hundred percent of the cyanide sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. The data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. No samples in SDG98K191 had elevated reporting limits for metals.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF METALS DATA – 98K191 (EMAX)

This section describes the full data validation for nineteen soil samples, which were analyzed for metals. Samples were analyzed by inductively coupled plasma spectrometry (ICP) for aluminum, barium, beryllium, cadmium, chromium, cobalt copper, iron, magnesium, manganese, nickel, potassium, silver, sodium, vanadium, zinc; and by Trace ICP for arsenic, lead, selenium and thallium following USEPA Method SW6010A. The samples were analyzed for mercury by cold vapor atomic absorption spectrometry (CVAA) by USEPA Method 7471; and antimony by graphite furnace atomic absorption spectrometry (GFAA) following USEPA Method 7041. Samples were analyzed by the EMAX Laboratories (Torrance, CA) and submitted as part of batch 98K191. Samples included as part of this validation are listed below:

Sample Identification #	Sample Identification #
SB10A-1A	SB19A1-2A
SB10A1-1B	SB19A1-2B
SB10A1-2A	SB19A1-1A
SB10A1-2B	SB19A1-1B
SB10A1-3A	SB19A1-3A
SB10A1-3B	SB19A1-3B
SB22A1-1A	SB22A1-1B
SB22A1-2A	SB22A1-2C
SB22A1-3B	SB19A1-4A
SB19A1-4B	

QA/QC criteria were established in the associated methodology, USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), and the project quality assurance plan (QAP)(W-C 1998). Evaluation of analytical data followed procedures outlined in USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994), where applicable.

Criteria evaluated included the following method performance criteria:

- Completeness of data package
- Laboratory case narrative
- Holding times
- Blank contamination
- Initial and continuing calibration verification
- Laboratory control samples (LCS)
- Laboratory duplicate analysis
- Matrix spike/Matrix spike duplicate samples (MS/MSD)
- Sample result verification
- Reporting limits

Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods.

Laboratory Case Narrative

The case narrative indicated that the preparation blank was free of contamination but review of the data indicates that beryllium, calcium, iron, lead and zinc were detected in the method blanks above the MDL. The narrative indicated the MS/MSD recoveries were outside limits for aluminum, antimony, iron, magnesium, and manganese. These issues are addressed in the appropriate sections below.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were analyzed within the evaluation criteria of 28 days for mercury and 6 months for other metals. **The sample receipt form indicated that insufficient ice was used in the sample cooler, and the temperature of the cooler was measured at 13 °C upon arrival at the laboratory. Since metals are stable compounds in a soil matrix, no data qualifications were made due to poor sample preservation.** No qualification of data was required based on holding time criteria.

Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Initial calibration, continuing calibration, and preparation blanks were all reported nondetect for all metals with the exception of those listed in the following table:

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Beryllium Calcium Iron Zinc Lead	0.0331 11.8 1.39 1.67 0.309	SB10A-1A, SB19A1-2A, SB10A1-1B, SB19A1-2B, SB10A1-2A, SB19A1-1A, SB10A1-2B, SB19A1-1B, SB10A1-3A, SB19A1-3A, SB10A1-3B, SB19A1-3B
CCB1 (ICP)	Beryllium Calcium Chromium	0.810 50.7 -3.64	K191-01 thru K191-08
CCB3 (ICP)	Barium Beryllium Calcium	1.09 µg/L 0.80 55.8	K191-20

Blank ID	Analyte	Conc.	Assoc. Samples
CCB3 (GFAA)	Antimony	1.27 µg/L	K191-14 thru K191-20
CCB2 (ICP)	Barium	2.18 µg/L	K191-09 thru K191-19
	Beryllium	2.12	
	Calcium	173	
	Chromium	7.3	
	Copper	7.12	
	Iron	51.8	
	Magnesium	131	
	Manganese	3.04	
	Silver	8.04	
	Sodium	107	
	Vanadium	6.71	

Antimony data for samples SB22A1-1B (0.2 mg/kg) and SB22A1-2A (0.2 mg/kg) were qualified nondetect, **U**, based on the CCB contamination. All associated silver data were reported nondetect, therefore did not require qualification. All associated barium, calcium, chromium, copper, iron, magnesium, manganese, and vanadium results were reported 5 times greater than the highest blank contamination result; therefore, no further qualifications of data were required based on blank contamination. Twenty-five percent of the blank sample results were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Initial Calibration Verification

Initial calibration verification (ICV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An initial calibration was analyzed at the beginning of the run sequence. Initial calibration curves were established using a blank and one standard for ICP; a blank and two standards Trace ICP, a blank and five standards for mercury (CVAA) and antimony (GFAA). The correlation coefficients for both mercury and antimony were greater than 0.995 as required by the methodology. Twenty-five percent of the initial calibration and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

Continuing Calibration Verification

Continuing calibration verification (CCV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data established by the initial calibration curve. CCV samples associated with the validated samples had recoveries within the evaluation criteria established in the QAPP (W-C 1998). Twenty-five percent of the CCV sample recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

The laboratory analyzed CCV samples at a frequency of 10 percent as specified by the methodologies. All CCV recoveries were within evaluation criteria, indicating that the

instrument was capable of producing acceptable qualitative and quantitative data; therefore, no qualifications were made to associated samples.

Laboratory Control Sample

Laboratory control samples (LCS were established to assess the accuracy of the analytical method and to demonstrate laboratory performance. LCS recoveries were within evaluation criteria established in the QAPP (W-C 1998); therefore, no qualification of data was required based on LCS recoveries. Twenty-five percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

Laboratory Duplicate Analysis

Laboratory duplicate samples were not analyzed to assess method precision by the laboratory at the time of analysis. The laboratory analyzed the matrix spike samples in duplicate to assess precision. See following section for information.

Matrix Spike/ Matrix Spike Duplicate Samples (MS/MSD)

Matrix spike/matrix spike duplicate samples (MS/MSD) were analyzed to assess accuracy and the effects of matrix interference during analysis. The laboratory spiked and analyzed samples SB22A1-3A. MS/MSD recoveries were all within the evaluation criteria with the exception of antimony, aluminum, iron, magnesium, and manganese. The following table summarizes MS/MSD data not within evaluation criteria.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB22A1-3A	Antimony	58/63	80-120	7	30
SB22A1-3A	Aluminum	41/143	80-120	111	20
SB22A1-3A	Iron	-92/201	80-120	537	20
SB22A1-3A	Magnesium	78/94	80-120	18	20
SB22A1-3A	Manganese	73/111	80-120	41	20

The following table summarizes the qualifications made to the associated data based on outlying MS/MSD recoveries and RPDs.

Field ID	Analyte	WC Qual
SB22A1-3A	Antimony	J
SB22A1-3A	Magnesium	J
SB22A1-3A	Manganese	J

Aluminum and iron concentrations in the sample were greater than 5X the associated spike concentration, therefore no qualification of the aluminum or iron data was required. Twenty-five percent of the MS/MSD recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted.

Sample Result Verification

Twenty-five percent of metal sample results were recalculated to validate that analyte quantitation was derived accurately; no calculation errors were noted. Twenty-five percent of the data summary forms were reviewed and compared to the raw data package; no transcription errors were noted.

Reporting Limits

The sample-reporting limit (RL) is the lowest concentration of an analyte that can be reported by the laboratory to be present in a sample result with a specified level of confidence. The RLs are a function of the sample characteristics, method quantitation, and laboratory performance. No samples in SDG98K191 had elevated reporting limits for metals.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

FULL VALIDATION OF PCB DATA (EMAX SDG 98K191)

This section describes the full validation for ten soil samples which were analyzed for polychlorinated biphenyls (PCB) by EPA SW-846 Method 8082. The samples were analyzed by EMAX Laboratories of Torrance, California and submitted as part of SDG 98K191. Samples included as part of this validation are listed below:

SB10A1-1A	SB10A1-3A	SB19A1-1A	SB22A1-1A	SB22A1-3A
SB10A1-2A	SB19A1-2A	SB19A1-3A	SB22A1-2A	SB19A1-4A

In addition to the standard PCB analyses, sample SB19A1-1A underwent SPLP extraction and the extract was analyzed for PCBs.

QA/QC criteria were established in Method 8082 and in the QAPP (URS Greiner Woodward Clyde, 1998). Evaluation of the analytical data followed procedures outlined in the USEPA Contract Program National Functional Guidelines for Organic Data Review (USEPA 1994) where applicable to SW-846 Method 8082.

- Significant problems identified in the Laboratory Case Narrative
- Holding times
- Initial calibration
- Continuing calibration
- Method blank contamination
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Retention times
- Target compound identification and quantitation
- System performance and overall assessment of data
- Transcription errors

Problems Identified in the Laboratory Case Narrative

No problems were identified in the laboratory case narrative, which are not discussed in other sections of this Data Validation.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. Chain of Custody forms and Sample Receipt forms indicated that all samples were extracted within seven days of sample collection and analyzed within 40 days of sample extraction. The sample receipt form indicated that insufficient ice was used in the sample cooler, and the temperature of the cooler was measured at 13 °C upon arrival at the laboratory. Since PCBs are extremely stable compounds, no data qualifications were made due to poor sample preservation.

Initial Calibrations

Initial calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for PCB analyses. The initial calibration for PCBs was done using a mixture of Aroclors 1016 and 1260 at five concentrations as outlined in Method 8082. Calibration factors (CFs) for each of the five major peaks from Aroclor 1016 and from two of the major peaks from Aroclor 1260 were recalculated and no transcription or calculation errors were noted. The %RSD for each of the peaks was below the method criteria of 20 percent. Recalculations of the %RSD for both were performed, and no errors in calculation were noted.

In addition to the initial calibration, a second source verification standard was analyzed to help confirm the accuracy of the standard concentration used during the initial calibration. Review and recalculation of the continuing calibrations CFs from the raw data indicated that the CFs were calculated correctly. The percent differences (%Ds) between the second source verification standard CFs and the initial calibration mean CFs were recalculated to ensure that they met the evaluation criteria of < 15%. All of the CFs were within the 15% criteria, and no calculation or transcription errors were noted.

Continuing Calibration

Continuing calibrations were performed at the required frequency of every 12 hours of analysis and this SDG contains two continuing calibrations. Review and recalculation of the continuing calibrations CFs from the raw data indicated that the CFs were calculated correctly. The percent differences (%Ds) between the continuing calibration CFs and the initial calibration mean CFs were recalculated to ensure that they met the evaluation criteria of < 15 percent.

Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by Method 8082. All target compounds were reported as nondetect. Review of chromatograms indicated that no peaks were present. No data qualifications were required based on blank samples.

Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. Ten percent of the recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

Sample SB22A1-3A was analyzed as a MS/MSD sample to assess accuracy and precision for the analyses. The MS/MSD recoveries and RPDs were recalculated from the raw data and

verified against the values presented on the QC summary form. No calculation or transcription errors were noted, and all recoveries and RPD were within the evaluation criteria. No data qualification were required.

Laboratory Control Samples (LCS)

Laboratory Control Samples were analyzed with each analytical batch as required by Method 8082. The LCS contained Aroclors 1016 and 1260 at appropriate concentrations. Review of the LCS summary forms indicated all LCS recoveries were within evaluation criteria. All of the spiking compound recoveries for each LCS were recalculated, and no calculation or transcription errors were noted.

Target Compound Identification and Quantitation

Aroclors 1260 was detected in two samples. The peaks for these compounds eluted at the correct retention times on both columns. The results were re-quantified from the raw data using the calculation provided in EPA SW-846 Method 8000 section 7.10.1.3. The concentration of Aroclor 1260 was miscalculated for sample SB19A1-1A due to the omission of the dilution factor. The laboratory re-submitted the hard copy data for this sample which indicated the correct concentration of Aroclor 1260. No other calculation or transcription errors were noted. No other target compounds were identified in any of the environmental samples. All chromatograms from both columns were examined and no substantial peaks (peaks 1/2 or greater the size of the low-level standard) were identified.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. MS/MSD, LCS and surrogate recoveries demonstrated that acceptable levels of accuracy and precision were achieved. In addition, completeness defined to be the percentage of analytical results, which are judged to be valid was 100 percent for this SDG.

FULL VALIDATION OF SVOC DATA - SDG K191

This section describes the full validation for twenty soil samples which were analyzed for semivolatile organic compounds by EPA SW-846 Method 8270C. The samples were analyzed by EMAX Laboratories of Torrance, California and submitted as part of SDG K191. Samples included as part of this validation are listed below:

SB10A1-1A	SB10A1-3B	SB19A1-3A	SB22A1-2C
SB10A1-1B	SB19A1-2A	SB19A1-3B	SB22A1-3A
SB10A1-2A	SB19A1-2B	SB22A1-1A	SB22A1-3B
SB10A1-2B	SB19A1-1A	SB22A1-1B	SB19A1-4A
SB10A1-3A	SB19A1-1B	SB22A1-2A	SB19A1-4B

QA/QC criteria were established in Method 8270C and in the QAPP (URS Greiner Woodward Clyde, 1998). Evaluation of the analytical data followed procedures outlined in the USEPA Contract Program National Functional Guidelines for Organic/Inorganic Review (USEPA 1994) where applicable to SW-846 Method 8270C.

Criteria evaluated included the following method performance criteria:

- Significant problems identified in the Laboratory Case Narrative
- Holding times
- GC/MS instrument performance
- Initial calibration
- Continuing calibration
- Method blank
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Internal Standard areas and retention times
- Target compound identification and quantitation
- Tentatively Identified Compounds (TICs)
- System performance and overall assessment of data
- Transcription errors

Problems Identified in the Laboratory Case Narrative

The laboratory case narrative indicated outlying surrogate and MS/MSD recoveries. In addition, the narrative indicated internal standard (IS) values below criteria. These issues are addressed in the appropriate sections below. No additional problems were noted in the case narrative.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy,

consistency, and holding time compliance. **The sample receipt form indicated that insufficient ice was used in the sample cooler, and the temperature of the cooler was measured at 13 °C upon arrival at the laboratory. Since SVOCs are stable compounds in a soil matrix, no data qualifications were made due to poor sample preservation.** Samples were extracted within 14 days of sample receipt and within 40 days of extraction.

Instrument Performance

GC/MS instrument performance checks were performed to ensure mass resolution, identification, and instrument sensitivity. Criteria for evaluation of instrument performance included possible transcription/calculation errors, adherence to instrument tuning frequency requirements, mass assignments, and ion abundance criteria. Instrument performance check samples were evaluated against criteria established in USEPA SW-846 Method 8270C.

Based on the raw data, the ion abundance criteria were within evaluation criteria for all masses, and no calculation or transcription errors were noted.

Initial Calibration

Calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for volatile analyses. An initial calibration was analyzed at the beginning of the run sequence. At least five concentration standards were used to establish the initial calibration curve as required by Method 8270C. For the initial calibration, the response factors (RFs) were reviewed and were greater than 0.05 for all analytes.

Review of the initial calibration summary forms indicated %RSDs were $\leq$ 30 percent for CCCs and non-CCCs with the exception of bis (2-ethylhexyl) phthalate (30.2%) for initial calibration 12-14-98. Bis (2-ethylhexyl) phthalate data reported as detect were previously qualified by the laboratory as estimated since the detected values were greater than the method detection limit (MDL) and less than the reporting limit (RL). No additional qualification of data was required. Bis (2-ethylhexyl) phthalate data reported as non-detect did not require qualification.

Review of the ICAL summary form indicated other analytes had RFs < 0.05 and %RSD values greater than 15 percent; however, these analytes were not target compounds for this project.

Recalculations of the RRFs and %RSD for four compounds per standard was performed, and no errors in calculation were noted.

Continuing Calibration

Review of the data indicated a CV was analyzed at the beginning of the analytical sequence, but was not analyzed at the end of the sequence or every 12 hours. Review of continuing calibration summary form indicated all RFs met the evaluation criteria of greater than 0.05 for SPCCs and non-SPCCs. In addition, percent differences (%Ds) met the evaluation

criteria of ≤ 20 percent for CCCs and < 50 percent for all target analytes. Recalculations of the RF and %D for one compound per standard was completed, and no errors in calculation were noted.

Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8270C. All target compounds were reported as nondetect. Review of chromatograms indicate all other peaks present were accounted or the concentrations reported were below the method detection limit.

Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. All surrogate recoveries were within the method acceptance criteria for the validated samples with the noted exceptions below:

Field ID	Surrogate	Recovery	Evaluation Criteria	Action
SB10A1-3A	2-Fluorophenol	18	25-135	None, one surrogate per fraction maybe outside criteria
	Nitrobenzene-d5	23	25-135	
SB10A1-3ARE	2-Fluorobiphenyl	33	34-135	Qualify the base/neutral fraction compounds as **J/UJ**
	2-Fluorophenol	17	25-135	
	Nitrobenzene-d5	20	25-135	
SB19A1-1B	2-Fluorobiphenyl	26	34-135	Qualify all compounds as **J/UJ**
	2-Fluorophenol	13	25-135	
	Nitrobenzene-d5	16	25-135	
	Phenol-d5	18	25-135	
SB19A1-1BRE	2-Fluorobiphenyl	27	34-135	Qualify all compounds as **J/UJ**
	2-Fluorophenol	15	25-135	
	Nitrobenzene-d5	18	25-135	
	Phenol-d5	20	25-135	
SB22A1-1B	2-Fluorobiphenyl	31	34-135	None, one surrogate per fraction maybe outside criteria

In addition, several surrogate compounds were not recovered as the surrogate compound was diluted out. Review of the raw data indicated the surrogate compounds were recovered; however the values were below the reporting limit due to the dilution of the sample. No qualification of data was required.

Ten percent of the recoveries were recalculated and no calculation or transcription errors were noted.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples are analyzed to assess accuracy and precision for the analyses. Sample SB22A1-3A was analyzed as an MS/MSD sample as part of this SDG. Several MS/MSD recoveries were outside evaluation criteria. Since Functional Guidelines indicates data should not be qualified on MS/MSD data alone, and associated QC parameters were within criteria, no qualification of data was required.

MS/MSD data were recalculated and confirmed using raw data No transcription errors were noted. The laboratory properly calculated the MS and MSD recoveries but did not calculate the MS/MSD RPDs correctly. The laboratory was contacted and the data were properly re-calculated and re-submitted.

Internal Standards

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent, and the IS retention times must be within 30 seconds of the IS continuing calibration retention time. IS areas for the following samples were below the lower limit and were qualified as indicated.

Field ID	Internal Standard
SB10A1-2A	Perylene-d_8
SB10A1-2B	Perylene-d_8
SB10A1-3A	Perylene-d_8
SB10A1-3B	Perylene-d_8
SB19A1-1A	Perylene-d_8
SB19A1-1BRE	All
SB19A1-4B	Perylene-d_8
SB19A1-3A	Chrysene-d_{12}, Perylene-d_8
SB22A1-1A	Perylene-d_8
SB22A1-2C	Perylene-d_8
SB22A1-3A	Perylene-d_8
SB19A1-4A	Perylene-d_8

Review of the chromatograms indicated a baseline shift between 24 and 40 minutes (the perylene-d_{12} range) for those samples listed above. While many of the analytes for the associated samples were reported as nondetect, the laboratory indicated the baseline shift pattern was indicative of motor oil, which was not a target analyte for SVOC analysis. Since the low internal standard actually results in a high bias associated with quantitation, data reported as detect were qualified as estimated (**J**). Data reported as nondetect did not require qualification.

Retention times for the samples in this SDG were within evaluation criteria. The raw data were verified, and no transcription errors were noted.

Laboatory Control Samples (LCS)

An LCS was analyzed to assess the accuracy of the analytical process. All LCS recoveries were within evaluation criteria. Ten percent of the spiking compound recoveries for the LCS were recalculated using the LCS summary form, and no calculation or transcription errors were noted.

Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified, the spectra of the identified compounds were verified against the library spectra, and the relative retention time was no greater than 0.06 different from the associated continuing calibration retention times. No anomalies were noted with the identification of the target compounds in the samples.

For the validation of compound quantitation, ten percent of the detected results were recalculated from the raw data, and no calculation errors were noted. Additionally, the reporting limits were verified to determine if reporting limits were adjusted for dilutions. Review of the raw data indicated not all compounds were quantified using the closest internal standard as recommended in the method; however, the laboratory did select an internal standard which was close to the target analyte. No qualification of data was required.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Acceptable levels of accuracy and precision, based on MS/MSD, LCS, and surrogate data were achieved for this SDG. In addition, completeness, defined to be the percentage of analytical results which are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG and should be used for their intended purpose.

FULL VALIDATION OF VOC DATA - SDG A2513

This section describes the full data validation for the volatile organic compound (VOC) data for twenty investigative soil samples, one matrix spike/matrix spike duplicate sample and field blank sample which were analyzed by Sevren Trent Laboratories of Monroe, CT. All samples were analyzed following EPA SW-846 Methods 5035/8260B. The validated samples in SDG A2513 are listed below:

SB10A1-1A	SB10A1-1B	SB10A1-2A	SB10A1-2B	SB10A1-3A
SB10A1-3B	SB19A1-2A	SB19A1-2B	SB19A1-1A	SB19A1-1B
SB19A1-3A	SB19A1-3B	SB22A1-1A	SB22A1-1B	SB22A1-2A
SB22A1-2C	SB22A1-3A	SB22A1-3B	FB111898	

QA/QC criteria used during the data validation were those criteria established in USEPA SW-846 Method 8260B and in the Quality Assurance Project Plan (QAPP) (W-C 1997). Criteria evaluated included the following method performance criteria:

- Significant problems identified in the Laboratory Case Narrative
- Holding times
- GC/MS instrument performance
- Initial and continuing calibration
- Method blank contamination
- Surrogate recoveries
- Laboratory control samples
- MS/MSD samples
- Internal Standard areas and retention times
- Target compound identification and quantitation
- Tentatively Identified Compounds (TICs)
- System performance and overall assessment of data
- Transcription errors

Problems Identified in the Laboratory Case Narrative

The laboratory case narrative indicated the following:

> *"The quant report concentrations do not match the form I's since the multiplier was calculated incorrectly in the instrument room. The correct multiplier has been manually edited on the quant reports and the form I's are calculated using the correct sample weights and percent moistures."*

The concentrations reported on the form I's were recalculated and verified as discussed below.

Holding Times

Review of the sample collection and analysis dates involved comparing the chains-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. Review of the COCs indicated that the sampling dates on the COC did not match the dates listed in the laboratory sample summary form for the following nine samples:

SB10A1-1B	SB10A1-2A	SB10A1-2B	SB10A1-3A	SB10A1-3B
SB19A1-1A	SB19A1-1B	SB19A1-2A	SB19A1-2B	

No corrective action to verify the discrepancy in sampling dates was noted in the case narrative by the laboratory. Review of field documentation indicates that the correct sampling date for samples listed above was November 18, 1998. All samples were analyzed within 14 days of collection. The sample checklist indicates that the coolers used for samples in this SDG were received at $4^{\circ}C \pm 2^{\circ}C$.

Instrument Performance

GC/MS instrument performance checks were performed to ensure mass resolution, identification, and instrument sensitivity. Criteria for evaluation of instrument performance included possible transcription/calculation errors, adherence to instrument tuning frequency requirements, mass assignments, and ion abundance criteria. Instrument performance check samples were evaluated against criteria established in USEPA SW-846 Method 8260B.

Based on the raw data, the ion abundance criteria were within evaluation criteria for all masses, and no calculation or transcription errors were noted.

Initial and Continuing Calibration

Initial and continuing calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for VOC analyses. Initial calibrations were analyzed at the required frequency. For the initial and continuing calibrations, the relative response factors (RRFs) were reviewed and were greater than 0.10 (chloromethane, 1,1-dichloroethane and Bromoform), 0.30 (chlorobenzene and 1,1,2,2-tetrachloroethane) and greater than 0.05 for all other analytes.

For the initial calibrations, at least five standards were used as required by USEPA SW-846 Method 8260B. Review of the initial calibration summary forms indicated %RSDs were $\leq$ 30 percent for CCCs and < 15 percent for non-CCCs with the exception of the following:

Calibration Date	Instrument ID	Analyte	% RSD	Comments
11-19-98	HP5971N	Bromomethane	17.1	qualified associated data estimated
11-19-98	HP5971N	Acetone	17.5	qualified associated data estimated
11-10-98	HP5971O	Bromomethane	26.1	qualified associated data estimated
11-10-98	HP5971O	Acetone	42.9	qualified associated data estimated
11-10-98	HP5971O	2-Butanone	30.3	qualified associated data estimated

Calibration Date	Instrument ID	Analyte	% RSD	Comments
11-10-98	HP5971O	4-methyl-2-pentanone	17.6	qualified associated data estimated
11-10-98	HP5971O	2-Hexanone	29.4	qualified associated data estimated

Recalculations of the RRFs and %RSD for four compounds per standard was performed, and no errors in calculation were noted.

Continuing calibrations were performed at the required frequency. Review of continuing calibration summary form indicated all RRFs met the evaluation criteria of greater than 0.10 (chloromethane, 1,1-dichloroethane and bromoform), 0.30 (chlorobenzene and 1,1,2,2-tetrachloroethane) and greater than 0.05 for all other analytes. In addition, percent differences (%Ds) met the evaluation criteria of $\leq$ 20 percent for CCCs and < 50 percent for all target analytes. Recalculations of the RRF and %RSD for four compounds per standard was completed, and no errors in calculation were noted.

Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8260B. All target compounds were reported as nondetect with the exception of acetone, methylene chloride and toluene. Toluene was detected in method blank samples VBLKN8 (0.5 µg/kg) and VBLKN9 (0.4 µg/kg) on November 20 and 21, 1998 respectively. Methylene chloride was detected in method blank samples VBLKN (6 µg/kg) and VBLKOX (0.8 µg/kg) analyzed on November 21 and 20, 1998 respectively. Acetone was detected in method blank sample VBLKOX (10 µg/kg) analyzed on November 20, 1998. Methylene chloride (3 µg/L), acetone (88 µg/L) and 2-butanone (5 µg/L) were detected in the field blank sample (FB 111898) submitted with the samples in this SDG.

Qualification of acetone, methylene chloride, 2-butanone and toluene data required is summarized in the following table:

Field I.D.	Analyte	Concentration (µg/L)	Qualifier	Comment
SB10A1-1A	Acetone	34	U	field blank contamination
SB10A1-1B	Acetone	32	U	field blank contamination
SB10A1-1B	2-Butanone	5	U	field blank contamination
SB10A1-2A	Acetone	18	U	field blank contamination
SB10A1-2B	Acetone	27	U	field blank contamination
SB19A1-2A	Methylene Chloride	5	U	field blank contamination
SB19A1-2A	Acetone	15	U	field blank contamination
SB19A1-2B	Acetone	12	U	field blank contamination
SB19A1-1A	Acetone	23	U	field blank contamination
SB19A1-1A	2-Butanone	4	U	field blank contamination
SB19A1-3A	Acetone	11	U	field blank contamination
SB19A1-3B	Acetone	32	U	field blank contamination
SB22A1-1B	Methylene Chloride	7	U	professional judgement

Field I.D.	Analyte	Concentration (µg/L)	Qualifier	Comment
SB22A1-2A	Methylene Chloride	15	U	method blank contamination
SB22A1-2A	Toluene	9	U	method blank contamination
SB22A1-2C	Toluene	8	U	method blank contamination
SB22A1-3B	Methylene Chloride	27	U	method blank contamination

No further qualification of the data was required based on blank contamination. Review of chromatograms indicate all peaks present were accounted.

Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. All surrogate recoveries were within the method acceptance criteria for the validated samples. Twenty percent of the recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples were analyzed to assess accuracy and precision for the analyses. Sample SB22A1-3A was analyzed as MS/MSD samples with this SDG. The MS/MSD recoveries and RPDs were within the evaluation criteria with the exception of bromomethane, methylene chloride, 1,2-dichloroethene, 2-butanone, 4-methyl-2-pentanone and 2-hexanone. As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Ten percent of the MS/MSD recoveries and RPD values were recalculated from the raw data, and no calculation errors were noted.

Internal Standards

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent, and the IS retention times must be within 30 seconds of the IS continuing calibration retention time. IS areas and retention times for the samples in this SDG were within evaluation criteria. The summary forms were verified to the raw data, and no transcription errors were noted.

Laboatory Control Samples (LCS)

Analysis of an LCS was completed with each analytical batch as required by USEPA SW-846 Method 8260B. The LCS contained the all target analytes. All LCS data were within evaluation criteria with the exception of those summarized in Table 1.

Acetone and bromomethane data were previously qualified estimated (**J**), or estimated nondetect (**UJ**), based on calibration data, therefore no further qualification of the acetone or bromomethane data was required. Associated data for compounds outside LCS evaluation criteria were qualified as summarized in Table 2.

Ten percent of the spiking compound recoveries for the LCS were recalculated, and no calculation or transcription errors were noted.

Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified, the spectra of the identified compounds were verified against the library spectra, and the relative retention time was no greater than 0.06 different from the associated continuing calibration retention times. No anomalies were noted with the identification of the target compounds in the samples.

For the validation of compound quantitation, one hundred percent of the detected results were recalculated from the raw data, and no calculation errors were noted. Additionally, the reporting limits were verified to determine if reporting limits were adjusted for dilutions.

Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Acceptable levels of accuracy and precision, based on MS/MSD, LCS, and surrogate data were achieved for this SDG. In addition, completeness, defined to be the percentage of analytical results which are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG. Qualification of data was not needed for any of the target compounds detected above the reporting limit in this SDG.

TABLE 1

LCS DATA OUTSIDE EVALUATION CRITERIA

LCS ID	Analyte	% Recovery	Evaluation Criteria	Comments
N1151.D	Methylene Chloride	80	83-114	qualify J/UJ
	Acetone	165	29-156	previously qualified based on calibration %RSD
	Carbon Disulfide	65	78-119	qualify J/UJ
	Chloroform	75	83-114	qualify J/UJ
	Carbon Tetrachloride	70	77-127	qualify J/UJ
	Bromodichloromethane	80	81-118	qualify J/UJ
	Trichloroethene	75	82-114	qualify J/UJ
	Dibromochloromethane	80	81-121	qualify J/UJ
	Tetrachloroethene	70	78-118	qualify J/UJ
N1169.D	Bromomethane	25	66-121	previously qualified based on calibration %RSD
	Acetone	185	29-156	previously qualified based on calibration %RSD
	Carbon Disulfide	65	78-119	qualify J/UJ
N1179.D	Bromomethane	30	66-121	qualify J/UJ
	Chloroethane	120	78-119	associated data ND, no qual
	Methylene Chloride	235	83-114	associated data ND, no qual
	Acetone	290	29-156	associated data ND, no qual
	Cis-1,3-Dichloropropene	115	74-111	associated data ND, no qual
	Trichloroethene	115	82-114	associated data ND, no qual
	2-Hexanone	155	47-150	associated data ND, no qual
	Ethylbenzene	120	82-113	associated data ND, no qual
	Styrene	120	77-118	associated data ND, no qual
	Xylene	122	77-120	associated data ND, no qual
O1103.D	Methylene Chloride	130	78-119	qualify detects estimated, J
	Acetone	115	83-114	previously qualified based on calibration %RSD
	Carbon Tetrachloride	70	77-127	qualify J/UJ
	Dibromochloromethane	80	81-121	qualify J/UJ
	1,1,2,2-Tetrachloroethane	120	76-118	associated data ND, no qual

LCS - laboratory control sample
J - estimated
UJ - estimated nondetect
ND - not detected

TABLE 2

DATA QUALIFICATIONS BASED ON LCS RECOVERIES

Field ID	LCS ID	Analyte	Qualifier
SB10A1-1A	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	J
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	J
SB10A1-1B	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	UJ
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ
SB10A1-2A	N11551.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	UJ
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ
SB10A1-2B	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	UJ
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ
SB19A1-2A	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	UJ
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ

TABLE 2 (continued)

DATA QUALIFICATIONS BASED ON LCS RECOVERIES

Field ID	LCS ID	Analyte	Qualifier
SB19A1-2B	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	J
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ
SB19A1-1A	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	J
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ
SB19A1-3A	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	J
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	J
SB19A1-3B	N1151.D	Methylene Chloride	UJ
		Carbon Disulfide	UJ
		Chloroform	J
		Carbon Tetrachloride	UJ
		Bromodichloromethane	UJ
		Trichloroethene	UJ
		Dibromochloromethane	UJ
		Tetrachloroethene	UJ
SB22A1-1B	N1169.D	Bromomethane	UJ
		Acetone	J
		Carbon Disulfide	UJ
SB22A1-2C	N1169.D	Bromomethane	UJ
		Acetone	J
		Carbon Disulfide	UJ
SB22A1-2A	N1179.D	Bromomethane	UJ
SB22A1-3A	N1169.D	Bromomethane	UJ
		Carbon Disulfide	UJ
SB22A1-3B	N1179.D	Bromomethane	UJ

TABLE 2 (continued)

DATA QUALIFICATIONS BASED ON LCS RECOVERIES

Field ID	LCS ID	Analyte	Qualifier
FB 111898	O1103.D	Methylene Chloride	J
		Carbon Tetrachloride	UJ
		Dibromochloromethane	UJ

LCS - Laboratory Control Sample
Qualifiers
J - Estimated
UJ - Estimated nondetect

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 7099-0004A

Reviewer: John D. Keith

Date Reviewed: 2-4-99

Sample Identification #	Sample Identification #
SB29A1-1A	SB8G1-1A
SB29A1-1B	SB8G1-1B
SB8I1-1A	SB8H1-1A
SB8I1-1B	SB8H1-1C
SB8I1-2A	SB8H1-2A
SB8I1-2B	SB8H1-2C
SB89C3-1A	SB8F1-1A
SB8C3-1A	SB8F1-1B
SB8C3-1A	SB8F1-2A
SB8C3-1A	SB8F1-2B
SB8C3-1B	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

Sample SB8F1-1A was analyzed with the compounds, 1,1,1-Trichloroethane and Trichloroethene, over the calibration curve. This analysis was reported with the two compounds flagged with an "E".

SVOCs

Samples SB8H1-1A, SB8H1-2A, SB8H1-2C, SB8F1-1A, SB8F1-1B, SB8F1-2A, SB29A1-1A, SB29A1-1B, SB8I1-1A, SB8I1-1B, SB8I1-2A, and SB8G1-1A were re-analyzed due to internal standard suppression. The reanalysis are indicated by the suffix "RE".

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
VBLKN7	Methylene Chloride	1	SB29A1-1A, SB8I1-1A, SB8I1-2A
VBLKN8	Methylene Chloride Acetone 2-Butanone	4 9 2	SB29A1-1B, SB8I1-1B, SB8I1-2B, SB89C3-1A, SB8C3-1A, SB8C3-1B, SB8G1-1A, SB8G1-1B
VBLKN9	Methylene Chloride Acetone	3 17	SB8H1-1C, SB8H1-2A, SB8H1-2C, SB8F1-1A, SB8F1-1B, SB8F1-2A, SB8F1-2B, SB8H1-1A
VBLKNA	Methylene Chloride Acetone	3 12	
SBLKEQ	Diethyl phthalate Di-n-butyl phthalate Butyl benzyl phthalate Bis(2-ethylhexyl) phthalate Di-n-octyl phthalate	4 15 2 11 6	SB8I1-2A, SB8I1-2B, SB8C3-1B, SB29A1-1A, SB29A1-1B, SB8I1-1A, SB8I1-1B, SB8G1-1A, SB29A1-1ARE, SB29A1-1BRE, SB8I1-1ARE, SB8I1-1BRE, SB89C3-1A, SB8C3-1A, SB8G1-1ARE, SB8I1-2ARE
SBLKGQ	Diethyl phthalate Di-n-butyl phthalate Bis(2-ethylhexyl)phthalate	8 23 100	SB8G1-1B, SB8F1-1B, SB8F1-2A, SB8F1-2B, SB8H1-1A, SB8H1-2A, SB8F1-1A, SB8H1-1C, SB8F1-2ARE, SB8H1-2ARE, SB8F1-1ARE, SB8H1-1ARE, SB8H1-2C, SB8F1-1BRE, SB8H1-2CRE

Field ID	Analyte	New RL	Qualification
SB29A1-1B	Acetone	11	U
SB29A1-1B	2-Butanone	4	U
SB8I1-1B	Methylene Chloride	9	U
SB8I1-1B	Acetone	19	U
SB8I1-1B	2-Butanone	4	U
SB8I1-2A	Methylene Chloride	9	U

Field ID	Analyte	New RL	Qualification
SB8I1-2A	Acetone	32	U
SB89C3-1A	Methylene Chloride	8	U
SB89C3-1A	Acetone	13	U
SB8C3-1A	Methylene Chloride	9	U
SB8C3-1A	Acetone	14	U
SB8C3-1A	2-Butanone	4	U
SB8C3-1B	2-Butanone	5	U
SB8G1-1A	Acetone	20	U
SB8G1-1A	2-Butanone	7	U
SB8G1-1B	Acetone	16	U
SB8G1-1B	2-Butanone	6	U
SB8H1-1A	Methylene Chloride	10	U
SB8H1-1A	Acetone	24	U
SB8H1-1C	Methylene Chloride	11	U
SB8H1-1C	Acetone	11	U
SB8H1-2A	Methylene Chloride	10	U
SB8H1-2A	Acetone	13	U
SB8H1-2C	Methylene Chloride	11	U
SB8H1-2C	Acetone	41	U
SB8F1-1A	Methylene Chloride	9	U
SB8F1-1A	Acetone	35	U
SB8F1-1B	Methylene Chloride	11	U
SB8F1-1B	Acetone	14	U
SB8F1-2A	Methylene Chloride	9	U
SB8F1-2A	Acetone	31	U
SB8F1-2B	Methylene Chloride	10	U
SB8F1-2B	Acetone	30	U
SB29A1-1A	Diethyl phthalate	370	U
SB29A1-1A	Di-n-butyl phthalate	370	U
SB29A1-1A	Bis(2-ethylhexyl) phthalate	370	U
SB29A1-1A	Di-n-octyl phthalate	370	U
SB29A1-1ARE	Diethyl phthalate	370	U
SB29A1-1ARE	Di-n-butyl phthalate	370	U
SB29A1-1ARE	Bis(2-ethylhexyl) phthalate	370	U
SB29A1-1B	Diethyl phthalate	380	U
SB29A1-1B	Di-n-butyl phthalate	380	U
SB29A1-1B	Bis(2-ethylhexyl) phthalate	380	U
SB29A1-1B	Di-n-octyl phthalate	380	U
SB29A1-1BRE	Diethyl phthalate	380	U
SB29A1-1BRE	Di-n-butyl phthalate	380	U

Field ID	Analyte	New RL	Qualification
SB29A1-1BRE	Bis(2-ethylhexyl) phthalate	380	U
SB8I1-1A	Diethyl phthalate	360	U
SB8I1-1A	Di-n-butyl phthalate	360	U
SB8I1-1A	Bis(2-ethylhexyl) phthalate	360	U
SB8I1-1A	Di-n-octyl phthalate	360	U
SB8I1-1ARE	Diethyl phthalate	360	U
SB8I1-1ARE	Di-n-butyl phthalate	360	U
SB8I1-1B	Diethyl phthalate	370	U
SB8I1-1B	Di-n-butyl phthalate	370	U
SB8I1-1B	Bis(2-ethylhexyl) phthalate	370	U
SB8I1-1BRE	Diethyl phthalate	370	U
SB8I1-1BRE	Di-n-butyl phthalate	370	U
SB8I1-1BRE	Bis(2-ethylhexyl) phthalate	370	U
SB8I1-2A	Diethyl phthalate	420	U
SB8I1-2A	Di-n-butyl phthalate	420	U
SB8I1-2A	Bis(2-ethylhexyl) phthalate	420	U
SB8I1-2A	Di-n-octyl phthalate	420	U
SB8I1-2ARE	Diethyl phthalate	420	U
SB8I1-2ARE	Di-n-butyl phthalate	420	U
SB8I1-2ARE	Bis(2-ethylhexyl) phthalate	420	U
SB8I1-2B	Diethyl phthalate	370	U
SB8I1-2B	Di-n-butyl phthalate	370	U
SB8I1-2B	Bis(2-ethylhexyl) phthalate	370	U
SB8I1-2B	Di-n-octyl phthalate	370	U
SB89C3-1A	Diethyl phthalate	360	U
SB89C3-1A	Di-n-butyl phthalate	360	U
SB89C3-1A	Bis(2-ethylhexyl) phthalate	360	U
SB8C3-1A	Diethyl phthalate	360	U
SB8C3-1A	Di-n-butyl phthalate	360	U
SB8C3-1A	Bis(2-ethylhexyl) phthalate	360	U
SB8C3-1B	Diethyl phthalate	340	U
SB8C3-1B	Di-n-butyl phthalate	340	U
SB8C3-1B	Butyl benzyl phthalate	340	U
SB8C3-1B	Bis(2-ethylhexyl) phthalate	340	U
SB8C3-1B	Di-n-octyl phthalate	340	U
SB8G1-1A	Diethyl phthalate	360	U
SB8G1-1A	Di-n-butyl phthalate	360	U
SB8G1-1A	Bis(2-ethylhexyl) phthalate	360	U
SB8G1-1A	Di-n-octyl phthalate	360	U
SB8G1-1ARE	Diethyl phthalate	360	U

Field ID	Analyte	New RL	Qualification
SB8G1-1ARE	Di-n-butyl phthalate	360	U
SB8G1-1ARE	Bis(2-ethylhexyl) phthalate	360	U
SB8G1-1ARE	Di-n-octyl phthalate	360	U
SB8G1-1B	Diethyl phthalate	360	U
SB8G1-1B	Di-n-butyl phthalate	360	U
SB8G1-1B	Bis(2-ethylhexyl) phthalate	360	U
SB8H1-1A	Diethyl phthalate	350	U
SB8H1-1A	Di-n-butyl phthalate	350	U
SB8H1-1A	Bis(2-ethylhexyl) phthalate	350	U
SB8H1-1ARE	Di-n-butyl phthalate	350	U
SB8H1-1ARE	Bis(2-ethylhexyl) phthalate	350	U
SB8H1-1C	Diethyl phthalate	350	U
SB8H1-1C	Di-n-butyl phthalate	350	U
SB8H1-1C	Bis(2-ethylhexyl) phthalate	350	U
SB8H1-2A	Diethyl phthalate	360	U
SB8H1-2A	Di-n-butyl phthalate	360	U
SB8H1-2A	Bis(2-ethylhexyl) phthalate	360	U
SB8H1-2ARE	Di-n-butyl phthalate	360	U
SB8H1-2ARE	Bis(2-ethylhexyl) phthalate	360	U
SB8H1-2C	Diethyl phthalate	360	U
SB8H1-2C	Di-n-butyl phthalate	360	U
SB8H1-2C	Bis(2-ethylhexyl) phthalate	360	U
SB8H1-2CRE	Diethyl phthalate	360	U
SB8H1-2CRE	Di-n-butyl phthalate	360	U
SB8H1-2CRE	Bis(2-ethylhexyl) phthalate	360	U
SB8F1-1A	Diethyl phthalate	360	U
SB8F1-1A	Di-n-butyl phthalate	360	U
SB8F1-1A	Bis(2-ethylhexyl) phthalate	360	U
SB8F1-1ARE	Di-n-butyl phthalate	360	U
SB8F1-1ARE	Bis(2-ethylhexyl) phthalate	360	U
SB8F1-1B	Diethyl phthalate	350	U
SB8F1-1B	Di-n-butyl phthalate	350	U
SB8F1-1B	Bis(2-ethylhexyl) phthalate	350	U
SB8F1-1B	Di-n-octyl phthalate	350	U
SB8F1-1BRE	Diethyl phthalate	350	U
SB8F1-1BRE	Di-n-butyl phthalate	350	U
SB8F1-1BRE	Bis(2-ethylhexyl) phthalate	350	U
SB8F1-2A	Diethyl phthalate	390	U
SB8F1-2A	Di-n-butyl phthalate	390	U
SB8F1-2A	Bis(2-ethylhexyl) phthalate	390	U

Field ID	Analyte	New RL	Qualification
SB8F1-2B	Diethyl phthalate	380	U
SB8F1-2B	Di-n-butyl phthalate	380	U
SB8F1-2B	Bis(2-ethylhexyl) phthalate	380	U
SB8F1-2ARE	Diethyl phthalate	390	U
SB8F1-2ARE	Di-n-butyl phthalate	390	U
SB8F1-2ARE	Bis(2-ethylhexyl) phthalate	390	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
N1798.D	Bromomethane	130	66-121		
	Chloroethane	150	78-119		
	Acetone	205	29-156		
	2-Butanone	235	55-146		
	2-Hexanone	185	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		
N1814.D	Bromomethane	140	66-121		
	Vinyl Chloride	140	63-129		
	Chloroethane	165	78-119		
	Methylene Chloride	125	83-114		
	Acetone	250	29-156		
	1,1-Dichloroethene	125	78-122		
	2-Butanone	250	55-146		
	Carbon Tetrachloride	75	77-127		
	1,2-Dichloropropane	130	77-125		
	2-Hexanone	180	47-150		
N1831.D	Chloroethane	130	78-119		
	Methylene Chloride	115	83-114		
	Acetone	240	29-156		
	Carbon Disulfide	60	78-119		
	2-Butanone	240	55-146		
	Carbon Tetrachloride	70	77-127		
	1,2-Dichloropropane	130	77-125		
	2-Hexanone	185	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
N1846.D	Bromomethane	140	66-121		
	Vinyl Chloride	135	63-129		
	Chloroethane	165	78-119		
	Methylene Chloride	115	83-114		
	Acetone	210	29-156		
	1,1-Dichloroethene	130	78-122		
	1,2-Dichloroethene	115	84-114		
	2-Butanone	250	55-146		
	Carbon Tetrachloride	75	77-127		
	1,2-Dichloropropane	135	77-125		
	2-Hexanone	185	47-150		

Field ID	Analyte	Qualification
SB29A1-1A	2-Butanone	J
SB29A1-1B	Carbon Tetrachloride	UJ
SB8I1-1B	Carbon Tetrachloride	UJ
SB8I1-2A	2-Butanone	J
SB8I1-2B	Carbon Tetrachloride	UJ
SB89C3-1A	Carbon Tetrachloride	UJ
SB8C3-1A	Carbon Tetrachloride	UJ
SB8C3-1B	Carbon Tetrachloride	UJ
SB8G1-1A	Carbon Tetrachloride	UJ
SB8H1-1A	Carbon Disulfide	UJ
SB8H1-1A	2-Butanone	J
SB8H1-1A	Carbon Tetrachloride	UJ
SB8H1-1C	Carbon Disulfide	UJ
SB8H1-1C	2-Butanone	J
SB8H1-1C	Carbon Tetrachloride	UJ
SB8H1-2A	Carbon Disulfide	UJ
SB8H1-2A	2-Butanone	J
SB8H1-2A	Carbon Tetrachloride	UJ
SB8H1-2C	Carbon Disulfide	UJ
SB8H1-2C	2-Butanone	J
SB8H1-2C	Carbon Tetrachloride	UJ
SB8H1-2C	2-Hexanone	J
SB8F1-1A	Carbon Disulfide	UJ
SB8F1-1A	2-Butanone	J
SB8F1-1A	Carbon Tetrachloride	UJ
SB8F1-1B	Carbon Disulfide	UJ
SB8F1-1B	2-Butanone	J

Field ID	Analyte	Qualification
SB8F1-1B	Carbon Tetrachloride	UJ
SB8F1-2A	Carbon Disulfide	UJ
SB8F1-2A	2-Butanone	J
SB8F1-2A	Carbon Tetrachloride	UJ
SB8F1-2B	Carbon Disulfide	UJ
SB8F1-2B	2-Butanone	J
SB8F1-2B	Carbon Tetrachloride	UJ

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action
SB8I1-2A	2,4,6-Tribromophenol	16	19-122	No Qual, only one fraction outside
SB29A1-1ARE	Terphenyl-d14	159	18-137	No Qual, only one fraction outside
SB29A1-1BRE	Terphenyl-d14	190	18-137	No Qual, only one fraction outside
SB8I1-1ARE	Terphenyl-d14	172	18-137	No Qual, only one fraction outside
SB8G1-1ARE	2,4,6-Tribromophenol	17	19-122	No Qual, only one fraction outside
SB8F1-2A	Terphenyl-d14	163	18-137	No Qual, only one fraction outside
SB8F1-2B	Terphenyl-d14	161	18-137	No Qual, only one fraction outside
SB8H1-1A	2-Fluorobiphenyl	126	18-137	No Qual, only one fraction outside
SB8H1-2A	2-Fluorobiphenyl	138	18-137	No Qual, only one fraction outside
SB8H1-2ARE	2-Fluorobiphenyl	130	18-137	No Qual, only one fraction outside
SB8H1-1ARE	2-Fluorobiphenyl	119	18-137	No Qual, only one fraction outside
SB8H1-2CRE	Phenol-d5	128	24-113	No Qual, only one fraction outside

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB8C3-1A	Vinyl Acetate	178/160	16-144	11	20
	2-Butanone	173/152	55-146	13	20
	Carbon Tetrachloride	71/72	77-127	1	20
	4-Methyl-2-Pentanone	164/152	58-141	8	20
	2-Hexanone	164/150	47-150	9	20
	Tetrachloroethene	77/76	78-118	1	20
	1,1,2,2-Tetrachloroethane	129124	76-118	4	20

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes.

Field ID	Analyte	Qual
SB29A1-1A	Acetone	U
SB8I1-1A	Acetone	U
SB8I1-2A	Acetone	U

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 7099-0004B

Reviewer: John D. Keith

Date Reviewed: 2-4-99

Sample Identification #	Sample Identification #
SB8C1-1A	SB8K1-4B
SB8C1-1B	SB12B3-1A
SB8E1-1A	SB12B3-1B
SB8E1-1B	SB08K1-3A
SB8E1-2A	SB08K1-3B
SB8E1-2B	SB12B3-2B
FB 010699	SB12B3-2A
SB12B3-3A	SB08K1-2A
SB12B3-3B	SB08K1-2B
SB08K1-4A	SB08K1-1A

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

VOCs

Sample SB12B3-2A was analyzed as a medium level soil due to high target compound concentrations.

SVOCs

Samples SB12B3-2A and SB08K1-1A were re-analyzed due to internal standard suppression. The reanalysis are indicated by the suffix "RE".

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
VBLKN9	Methylene Chloride Acetone	3 17	SB8C1-1A, SB8C1-1B
VBLKNA	Methylene Chloride Acetone	3 12	SB8E1-1A, SB8E1-1B, SB8E1-2A, SB8E-2B, SB12B3-3A, SB12B3-3B, SB08K1-4A, SB8K1-4B, SB12B3-1A, SB12B3-1B
VBLKNB	Methylene Chloride Acetone 2-Butanone	1 11 2	SB12B3-2B, SB08K1-3A, SB08K1-3B, SB08K1-2A,
VBLKND	Methylene Chloride Trichloroethene 4-Methyl-2-Pentanone 2-Hexanone Toluene Xylene	2 0.4 0.8 0.8 0.2 0.3	SB08K1-2B
VBLKNE	Methylene Chloride Vinyl Acetate Trichloroethene 4-Methyl-2-Pentanone	2 0.7 0.4 0.9	SB08K1-1A
VBLKOH	Methylene Chloride Acetone 2-Butanone	85 970 850	SB12B3-2A
SBLKFR	Naphthalene Diethyl phthalate Di-n-butyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	0.07 0.2 0.5 2 0.08	FB 010699
SBLKIR	Diethyl phthalate Di-n-butyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	6 21 5 27	SB8C1-1A, SB8C1-1B, SB8E1-1A, SB8E1-1B, SB8E1-2A, SB8E1-2B

Blank ID	Analyte	Conc.	Assoc. Samples
SBLKMR	Diethyl phthalate Di-n-butyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	7 17 28 3	SB12B3-3A, SB12B3-3B, SB08K1-4A, SB8K1-4B, SB12B3-1A, SB12B3-1B, SB08K1-3A, SB08K1-3B, SB12B3-2B, SB08K1-2A, SB12B3-2A, SB08K1-2B, SB08K1-1A, SB08K1-1ARE, SB12B3-2AR

Field ID	Analyte	New RL	Qualification
SB8C1-1A	Methylene Chloride	10	U
SB8C1-1A	Acetone	17	U
SB8C1-1B	Methylene Chloride	10	U
SB8C1-1B	Acetone	11	U
SB8E1-1A	Methylene Chloride	9	U
SB8E1-1A	Acetone	20	U
SB8E1-1B	Methylene Chloride	10	U
SB8E1-1B	Acetone	10	U
SB8E1-2A	Methylene Chloride	11	U
SB8E1-2A	Acetone	20	U
SB8E1-2B	Methylene Chloride	9	U
SB8E1-2B	Acetone	12	U
FB 010699	Methylene Chloride	10	U
SB12B3-3A	Methylene Chloride	10	U
SB12B3-3A	Acetone	18	U
SB12B3-3B	Methylene Chloride	8	U
SB12B3-3B	Acetone	11	U
SB08K1-4A	Methylene Chloride	10	U
SB08K1-4A	Acetone	14	U
SB08K1-4B	Methylene Chloride	14	U
SB08K1-4B	Acetone	16	U
SB12B3-1A	Methylene Chloride	10	U
SB12B3-1A	Acetone	20	U
SB12B3-1B	Methylene Chloride	12	U
SB12B3-1B	Acetone	13	U
SB08K1-3A	Methylene Chloride	10	U
SB08K1-3A	Acetone	15	U
SB08K1-3B	Methylene Chloride	9	U
SB08K1-3B	Acetone	18	U
SB08K1-3B	2-Butanone	6	U
SB12B3-2A	Methylene Chloride	950	U
SB12B3-2A	Acetone	1100	U
SB12B3-2A	2-Butanone	950	U

Field ID	Analyte	New RL	Qualification
SB08K1-2A	Methylene Chloride	10	U
SB08K1-2A	Acetone	80	U
SB08K1-2B	Methylene Chloride	10	U
SB08K1-2B	Acetone	20	U
SB08K1-2B	4-Methyl-2-Pentanone	5	U
SB08K1-1A	Methylene Chloride	10	U
SB08K1-1A	Vinyl Acetate	10	U
SB08K1-1A	4-Methyl-2-Pentanone	5	U
SB8C1-1A	Diethyl phthalate	360	U
SB8C1-1A	Di-n-butyl phthalate	360	U
SB8C1-1A	Bis(2-Ethylhexyl) phthalate	360	U
SB8C1-1A	Di-n-octyl phthalate	360	U
SB8C1-1B	Diethyl phthalate	380	U
SB8C1-1B	Di-n-butyl phthalate	380	U
SB8C1-1B	Bis(2-Ethylhexyl) phthalate	380	U
SB8C1-1B	Di-n-octyl phthalate	380	U
SB8E1-1A	Diethyl phthalate	360	U
SB8E1-1A	Di-n-butyl phthalate	360	U
SB8E1-1A	Bis(2-Ethylhexyl) phthalate	360	U
SB8E1-1B	Diethyl phthalate	380	U
SB8E1-1B	Di-n-butyl phthalate	380	U
SB8E1-1B	Bis(2-Ethylhexyl) phthalate	380	U
SB8E1-1B	Di-n-octyl phthalate	380	U
SB8E1-2A	Diethyl phthalate	380	U
SB8E1-2A	Di-n-butyl phthalate	380	U
SB8E1-2A	Bis(2-Ethylhexyl) phthalate	380	U
SB8E1-2A	Di-n-octyl phthalate	380	U
SB8E1-2B	Diethyl phthalate	380	U
SB8E1-2B	Di-n-butyl phthalate	380	U
SB8E1-2B	Bis(2-Ethylhexyl) phthalate	380	U
SB8E1-2B	Di-n-octyl phthalate	380	U
FB 010699	Naphthalene	10	U
FB 010699	Diethyl phthalate	10	U
FB 010699	Di-n-butyl phthalate	10	U
FB 010699	Bis(2-Ethylhexyl) phthalate	10	U
SB12B3-3A	Diethyl phthalate	350	U
SB12B3-3A	Di-n-butyl phthalate	350	U
SB12B3-3A	Bis(2-Ethylhexyl) phthalate	350	U
SB12B3-3A	Di-n-octyl phthalate	350	U
SB12B3-3B	Diethyl phthalate	350	U
SB12B3-3B	Di-n-butyl phthalate	350	U
SB12B3-3B	Bis(2-Ethylhexyl) phthalate	350	U
SB12B3-3B	Di-n-octyl phthalate	350	U
SB08K1-4A	Diethyl phthalate	340	U

Field ID	Analyte	New RL	Qualification
SB08K1-4A	Di-n-butyl phthalate	340	U
SB08K1-4A	Bis(2-Ethylhexyl) phthalate	340	U
SB08K1-4A	Di-n-octyl phthalate	340	U
SB08K1-4B	Diethyl phthalate	390	U
SB08K1-4B	Di-n-butyl phthalate	390	U
SB08K1-4B	Bis(2-Ethylhexyl) phthalate	390	U
SB08K1-4B	Di-n-octyl phthalate	390	U
SB12B3-1A	Diethyl phthalate	370	U
SB12B3-1A	Di-n-butyl phthalate	370	U
SB12B3-1A	Bis(2-Ethylhexyl) phthalate	370	U
SB12B3-1A	Di-n-octyl phthalate	370	U
SB12B3-1B	Diethyl phthalate	350	U
SB12B3-1B	Di-n-butyl phthalate	350	U
SB12B3-1B	Bis(2-Ethylhexyl) phthalate	350	U
SB12B3-1B	Di-n-octyl phthalate	350	U
SB08K1-3A	Diethyl phthalate	360	U
SB08K1-3A	Di-n-butyl phthalate	360	U
SB08K1-3A	Bis(2-Ethylhexyl) phthalate	360	U
SB08K1-3A	Di-n-octyl phthalate	360	U
SB08K1-3B	Diethyl phthalate	350	U
SB08K1-3B	Di-n-butyl phthalate	350	U
SB08K1-3B	Bis(2-Ethylhexyl) phthalate	350	U
SB08K1-3B	Di-n-octyl phthalate	350	U
SB12B3-2B	Diethyl phthalate	340	U
SB12B3-2B	Di-n-butyl phthalate	340	U
SB12B3-2B	Bis(2-Ethylhexyl) phthalate	340	U
SB12B3-2B	Di-n-octyl phthalate	340	U
SB12B3-2A	Bis(2-Ethylhexyl) phthalate	380	U
SB08K1-2B	Diethyl phthalate	370	U
SB08K1-2B	Di-n-butyl phthalate	370	U
SB08K1-2B	Bis(2-Ethylhexyl) phthalate	370	U
SB08K1-1A	Bis(2-Ethylhexyl) phthalate	350	U
SB08K1-1ARE	Bis(2-Ethylhexyl) phthalate	350	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
M1707.D	Vinyl Chloride	145	63-129		
	Chloroethane	155	78-119		
	Methylene Chloride	115	83-114		
	Acetone	190	29-156		
	Carbon Disulfide	125	78-119		
	2-Butanone	125	78-122		
	1,1,2,2-Tetrachloroethane	160	55-146		
	Ethylbenzene	130	76-118		
		115	82-113		
N1831.D	Chloroethane	130	78-119		
	Methylene Chloride	115	83-114		
	Acetone	240	29-156		
	Carbon Disulfide	60	78-119		
	2-Butanone	240	55-146		
	Carbon Tetrachloride	70	77-127		
	1,2-Dichloropropane	130	77-125		
	2-Hexanone	185	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		
N1846.D	Bromomethane	140	66-121		
	Vinyl Chloride	135	63-129		
	Chloroethane	165	78-119		
	Methylene Chloride	115	83-114		
	Acetone	210	29-156		
	1,1-Dichloroethene	130	78-122		
	1,2-Dichloroethene	115	84-114		
	2-Butanone	250	55-146		
	Carbon Tetrachloride	75	77-127		
	1,2-Dichloropropane	135	77-125		
	2-Hexanone	185	47-150		
N1861.D	Bromomethane	130	66-121		
	Vinyl Chloride	135	63-129		
	Chloroethane	170	78-119		
	Methylene Chloride	115	83-114		
	Acetone	240	29-156		
	1,1-Dichloroethene	130	78-122		
	2-Butanone	255	55-146		
	Carbon Tetrachloride	70	77-127		
	1,2-Dichloropropane	140	77-125		
	2-Hexanone	190	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
N1898.D	Chloroethane	150	78-119		
	Acetone	205	29-156		
	Vinyl Acetate	195	16-144		
	Chloroform	80	83-114		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	245	55-146		
	Carbon Tetrachloride	70	77-127		
	Bromodichloromethane	80	81-118		
	1,2-Dichloropropane	130	77-125		
	Dibromochloromethane	80	81-121		
	2-Hexanone	170	47-150		
	Tetrachloroethene	75	78-118		
N1915.D	Chloroethane	155	78-119		
	Vinyl Acetate	195	16-144		
	Chloroform	80	83-114		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	190	55-146		
	1,1,1-Trichloroethane	70	72-128		
	Carbon Tetrachloride	65	77-127		
	Bromodichloromethane	80	81-118		
	1,2-Dichloropropane	130	77-125		
	Dibromochloromethane	80	81-121		
	Tetrachloroethene	75	78-118		
O1863.D	Chloroethane	155	78-119		
	2-Butanone	150	55-146		

Field ID	Analyte	Qualification
SB8C1-1A	Carbon Disulfide	UJ
SB8C1-1A	2-Butanone	J
SB8C1-1A	Carbon Tetrachloride	UJ
SB8C1-1B	Carbon Disulfide	UJ
SB8C1-1B	2-Butanone	J
SB8C1-1B	Carbon Tetrachloride	UJ
SB8E1-1A	2-Butanone	J
SB8E1-1A	Carbon Tetrachloride	UJ
SB8E1-1B	2-Butanone	J
SB8E1-1B	Carbon Tetrachloride	UJ
SB8E1-2A	2-Butanone	J
SB8E1-2A	Carbon Tetrachloride	UJ
SB8E1-2B	2-Butanone	J
SB8E1-2B	Carbon Tetrachloride	UJ
SB12B3-3A	2-Butanone	J
SB12B3-3A	Carbon Tetrachloride	UJ

Field ID	Analyte	Qualification
SB12B3-3B	Carbon Tetrachloride	UJ
SB08K1-4A	1,2-Dichloroethane	J
SB08K1-4A	Carbon Tetrachloride	UJ
SB8K1-4B	2-Butanone	J
SB8K1-4B	Carbon Tetrachloride	UJ
SB12B3-1A	2-Butanone	J
SB12B3-1A	Carbon Tetrachloride	UJ
SB12B3-1B	2-Butanone	J
SB12B3-1B	Carbon Tetrachloride	UJ
SB08K1-3A	Carbon Tetrachloride	UJ
SB08K1-3B	Carbon Tetrachloride	UJ
SB08K1-2A	Vinyl Chloride	J
SB08K1-2A	1,1-Dichloroethene	J
SB08K1-2A	2-Butanone	J
SB08K1-2A	Carbon Tetrachloride	UJ
SB08K1-2B	Chloroform	J
SB08K1-2B	1,2-Dichloroethane	UJ
SB08K1-2B	2-Butanone	J
SB08K1-2B	Carbon Tetrachloride	UJ
SB08K1-2B	Bromodichloromethane	UJ
SB08K1-2B	Dibromochloromethane	UJ
SB08K1-2B	Tetrachloroethene	UJ
SB08K1-1A	Chloroform	J
SB08K1-1A	1,2-Dichloroethane	UJ
SB08K1-1A	2-Butanone	J
SB08K1-1A	1,1,1-Trichloroethane	UJ
SB08K1-1A	Carbon Tetrachloride	UJ
SB08K1-1A	Bromodichloromethane	J
SB08K1-1A	Tetrachloroethene	UJ

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action
SB12B3-2A	2-Fluorobiphenyl	194	30-115	Qual all acid fraction data
SB12B3-2A	Terphenyl-d14	270	18-137	Qual all acid fraction data
SB12B3-2A	2,4,6-Tribromophenol	172	19-122	Qual all acid fraction data
SB12B3-2ARE	2-Fluorobiphenyl	117	30-115	Qual all acid fraction data
SB12B3-2ARE	Terphenyl-d14	243	18-137	Qual all acid fraction data

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12B3-2B	Carbon Disulfide	67/69	78-119	3	20
	Chloroform	82/82	83-114	0	20
	1,2-Dichloroethane	79/80	80-123	1	20
	2-Butanone	165/171	55-146	4	20
	Carbon Tetrachloride	67/71	77-127	6	20
	Trichloroethene	79/76	82-114	4	20
	Trans-1,3-Dichloropropene	81/76	80-128	6	20
	4-Methyl-2-Pentanone	175/200	58-141	13	20
	2-Hexanone	172/200	47-150	15	20
	Tetrachloroethene	74/76	78-118	3	20
	1,1,2,2-Tetrachloroethane	140/145	76-118	4	20
	Styrene	67/84	77-118	22	20

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes.

Field ID	Analyte	Qual
SB08K1-2B	Acetone	U*
SB08K1-1A	Acetone	U*

* Professional Judgement

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 7099-0004C

Reviewer: John D. Keith

Date Reviewed: 2-3-99

Sample Identification #	Sample Identification #
SB08K1-1B	SB12B1-1B
SB8C2-1A	SB12B1-1A
SB8C2-1B	SB12B1-1A
SB8L1-5A	SB12B1-1A
SB9L1-5B	FB 010899
SB08D-1A	SB12B2-1A
SB08D-1B	SB12B2-1B
SB08A-1A	SB08K2-1A
SB08A-1B	SB08K2-1B
SB47B1-1A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

SVOCs

Samples SB12B2-1B was re-analyzed due to internal standard suppression. The reanalysis is indicated by the suffix "RE". This issue is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
VBLKNB	Methylene Chloride Acetone 2-Butanone	1 11 2	SB2C2-1A, SB8C2-1B, SB8L1-5A, SB8L1-5B, SB08D-1A, SB08D-1B
VBLKNC	Methylene Chloride Acetone Trichloroethene	1 5 0.5	SB12B2-1A, SB08A-1A, SB08A-1B, SB47B1-1A, SB12B1-1B, SB12B2-1A, SB08K2-1A, SB08K2-1B
VBLKND	Methylene Chloride Trichloroethene Xylene	2 0.4 0.3	SB12B2-1B
VBLKNE	Methylene Chloride Vinyl Acetate Trichloroethene 2-Hexanone	2 0.7 0.4 0.9	SB08K1-1B
SBLKNP	Di-n-butyl phthalate Bis(2-Ethylhexyl) phthalate	12 15	SB08K1-1B, SB8C2-1A, SB8C2-1B, SB8L1-5A, SB8L1-5B, SB08D-1A, SB08D-1B, SB08A-1A, SB08A-1B, SB47B1-1A, SB12B1-1B, SB12B1-1A, SB12B2-1A, SB12B2-1B, SB12B2-1BRE, SB08K2-1A, SB08K2-1B
SBLKOP	Di-n-butyl phthalate	0.6	FB 010899

Field ID	Analyte	New RL	Qualification
SB08K1-1B	Acetone	41	U
SB8C2-1A	Methylene Chloride	10	U
SB8C2-1A	Acetone	20	U
SB8C2-1A	2-Butanone	5	U
SB8C2-1B	Methylene Chloride	9	U
SB8C2-1B	Acetone	1	U
SB8C2-1B	2-Butanone	9	U
SB8L1-5A	Methylene Chloride	9	U
SB8L1-5A	Acetone	22	U
SB8L1-5A	2-Butanone	4	U
SB8L1-5B	Methylene Chloride	11	U
SB8L1-5B	Acetone	11	U

Field ID	Analyte	New RL	Qualification
SB8L1-5B	2-Butanone	5	U
SB08D-1A	Methylene Chloride	9	U
SB08D-1A	Acetone	32	U
SB08D-1A	2-Butanone	9	U
SB08D-1B	Methylene Chloride	9	U
SB08D-1B	Acetone	36	U
SB08D-1B	2-Butanone	10	U
SB08A-1A	Methylene Chloride	10	U
SB08A-1A	Acetone	20	U
SB08A-1A	2-Butanone	5	U
SB08A-1B	Methylene Chloride	9	U
SB08A-1B	Acetone	13	U
SB08A-1B	2-Butanone	4	U
SB47B1-1A	Methylene Chloride	10	U
SB47B1-1A	Acetone	18	U
SB47B1-1A	2-Butanone	5	U
SB12B1-1B	Methylene Chloride	10	U
SB12B1-1B	Acetone	11	U
SB12B1-1B	2-Butanone	5	U
SB12B1-1A	Methylene Chloride	10	U
SB12B1-1A	Acetone	12	U
SB12B2-1A	Methylene Chloride	10	U
SB12B2-1A	Acetone	24	U
SB12B2-1A	Trichloroethene	5	U
SB12B2-1B	Methylene Chloride	10	U
SB12B2-1B	Acetone	10	U
SB12B2-1B	Trichloroethene	7	U
SB08K2-1A	Methylene Chloride	9	U
SB08K2-1A	Acetone	96	U
SB08K2-1A	Trichloroethene	5	U
SB08K2-1B	Methylene Chloride	12	U
SB08K2-1B	Acetone	27	U
SB08K2-1B	Trichloroethene	6	U
SB08K1-1B	Bis(2-Ethylhexyl) phthalate	370	U
SB8C2-1A	Di-n-butyl phthalate	380	U
SB8C2-1A	Bis(2-Ethylhexyl) phthalate	380	U
SB8C2-1B	Di-n-butyl phthalate	350	U
SB8C2-1B	Bis(2-Ethylhexyl) phthalate	350	U
SB8L1-5A	Di-n-butyl phthalate	370	U
SB8L1-5A	Bis(2-Ethylhexyl) phthalate	370	U
SB8L1-5B	Di-n-butyl phthalate	340	U
SB08D-1A	Di-n-butyl phthalate	370	U
SB08D-1A	Bis(2-Ethylhexyl) phthalate	370	U
SB08D-1B	Di-n-butyl phthalate	370	U

Field ID	Analyte	New RL	Qualification
SB08D-1B	Bis(2-Ethylhexyl) phthalate	370	U
SB08A-1A	Di-n-butyl phthalate	360	U
SB08A-1A	Bis(2-Ethylhexyl) phthalate	360	U
SB08A-1B	Di-n-butyl phthalate	350	U
SB08A-1B	Bis(2-Ethylhexyl) phthalate	350	U
SB47B1-1A	Di-n-butyl phthalate	360	U
SB12B1-1B	Di-n-butyl phthalate	340	U
SB12B1-1A	Di-n-butyl phthalate	370	U
FB010899	Di-n-butyl phthalate	10	U
SB12B2-1A	Di-n-butyl phthalate	380	U
SB12B2-1A	Bis(2-Ethylhexyl) phthalate	380	U
SB12B2-1B	Di-n-butyl phthalate	340	U
SB12B2-1B	Bis(2-Ethylhexyl) phthalate	470	U
SB12B2-1BRE	Bis(2-Ethylhexyl) phthalate	400	U
SB08K2-1A	Di-n-butyl phthalate	380	U
SB08K2-1B	Di-n-butyl phthalate	350	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
M1707.D	Vinyl Chloride	145	63-129		
	Chloroethane	155	78-119		
	Methylene Chloride	115	83-114		
	Acetone	190	29-156		
	Carbon Disulfide	125	78-119		
	1,1-Dichloroethene	125	78-122		
	1,2-Dichloroethene	120	84-114		
	2-Butanone	160	55-146		
	1,1,2,2-Tetrachloroethane	130	76-118		
	Ethylbenzene	115	82-113		

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
M1861.D	Bromomethane	130	66-121		
	Vinyl Chloride	135	63-129		
	Chloroethane	170	78-119		
	Methylene Chloride	115	83-114		
	Acetone	240	29-156		
	1,1-Dichloroethene	130	78-122		
	2-Butanone	255	55-146		
	Carbon Tetrachloride	70	77-127		
	1,2-Dichloropropane	140	77-125		
	2-Hexanone	190	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		
M1879.D	Bromomethane	125	66-121		
	Vinyl Chloride	130	63-129		
	Chloroethane	160	78-119		
	Acetone	235	29-156		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	245	55-146		
	Carbon Tetrachloride	75	77-127		
	1,2-Dichloropropane	135	77-125		
	2-Hexanone	190	47-150		
M1898.D	Chloroethane	150	78-119		
	Acetone	205	29-156		
	Vinyl Acetate	195	16-144		
	Chloroform	80	83-114		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	245	55-146		
	Carbon Tetrachloride	70	77-127		
	Bromodichloromethane	80	81-118		
	1,2-Dichloropropane	130	77-125		
	Dibromochloromethane	80	81-121		
	2-Hexanone	170	47-150		
	Tetrachloroethene	75	78-118		
M1915.D	Chloroethane	155	78-119		
	Vinyl Acetate	195	16-144		
	Chloroform	80	83-114		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	190	55-146		
	1,1,1-Trichloroethane	70	72-128		
	Carbon Tetrachloride	65	77-127		
	Bromodichloromethane	80	81-118		
	1,2-Dichloropropane	130	77-125		
	Dibromochloromethane	80	81-121		
	Tetrachloroethene	75	78-118		
SBLKNP	Benzoic acid	923	01-474		

Field ID	Analyte	Qualification
SB08K1-1B	Chloroform	J
SB08K1-1B	1,2-Dichloroethane	UJ
SB08K1-1B	1,1,1-Trichloroethane	UJ
SB08K1-1B	Carbon Tetrachloride	UJ
SB08K1-1B	Bromodichloromethane	UJ
SB08K1-1B	Dibromochloromethane	UJ
SB08K1-1B	Tetrachloroethene	UJ
SB8C2-1A	Carbon Tetrachloride	UJ
SB8C2-1B	Carbon Tetrachloride	UJ
SB08L1-5A	Carbon Tetrachloride	UJ
SB08L1-5B	Carbon Tetrachloride	UJ
SB08D-1A	Carbon Tetrachloride	UJ
SB08D-1B	Carbon Tetrachloride	UJ
SB08A-1A	1,2-Dichloroethane	UJ
SB08A-1A	Carbon Tetrachloride	UJ
SB08A-1B	1,2-Dichloroethane	UJ
SB08A-1B	2-Butanone	J
SB08A-1B	Carbon Tetrachloride	UJ
SB47B1-1A	1,2-Dichloroethane	UJ
SB47B1-1A	2-Butanone	J
SB47B1-1A	Carbon Tetrachloride	UJ
SB12B1-1B	1,2-Dichloroethane	UJ
SB12B1-1B	2-Butanone	J
SB12B1-1B	Carbon Tetrachloride	UJ
SB12B1-1A	1,2-Dichloroethane	UJ
SB12B1-1A	2-Butanone	J
SB12B1-1A	Carbon Tetrachloride	UJ
SB12B2-1A	1,2-Dichloroethane	UJ
SB12B2-1A	2-Butanone	J
SB12B2-1A	Carbon Tetrachloride	UJ
SB12B2-1B	Chloroform	J
SB12B2-1B	1,2-Dichloroethane	UJ
SB12B2-1B	2-Butanone	J
SB12B2-1B	Carbon Tetrachloride	UJ
SB12B2-1B	Bromodichloromethane	UJ
SB12B2-1B	Dibromochloromethane	UJ
SB08K2-1A	1,2-Dichloroethane	UJ
SB08K2-1A	2-Butanone	J
SB08K2-1A	Carbon Tetrachloride	UJ
SB08K2-1B	1,2-Dichloroethane	UJ
SB08K2-1B	2-Butanone	J
SB08K2-1B	Carbon Tetrachloride	UJ
SB08A-1A	Benzoic acid	J
SB12B2-1A	Benzoic Acid	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12B1-1A	Chloroethane	123/124	78-129	1	20
	Methylene Chloride	101/103	83-114	2	20
	Vinyl Acetate	174/179	29-156	63	20
	2-Butanone	162/177	16-144	3	20
	Carbon Tetrachloride	76/79	55-146	9	20
	4-Methyl-2-Pentanone	170/189	58-141	10	20
	2-Hexanone	166/189	47-150	13	20
	1,1,2-2-Tetrachloroethane	132/143	76-118	8	20
SB12B1-1A	Benzoic acid	60/247	01-474	120	

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 7099-0004D

Reviewer: John D. Keith

Date Reviewed: 2-3-99

Sample Identification #	Sample Identification #
SB8D2-A	SB8A2B
SB8D2B	SB8A2B
SB8C4-1C	SB8A2A
SB8C4-1B	SB8A3A
SB8A2B	SB8A3B

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

VOCs

Sample SB8A2A was analyzed as a medium level soil due to high target compound concentrations.

SVOCs

Samples SB8C4-1A and SB8A2A was re-analyzed due to internal standard suppression. The reanalysis is indicated by the suffix "RE". This issue is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
VBLKND	Methylene Chloride Trichloroethene Xylene	2 0.4 0.3	SB8D2-A, SB8D2B, SB8C4-1A, SB8C4-1B, SB8A2B, SB8A3B
VBLKNE	Methylene Chloride Vinyl Acetate Trichloroethene 2-Hexanone	2 0.7 0.4 0.9	SB8A3A
SBLKOH	Methylene Chloride Acetone 2-Butanone	85 970 850	SB8A2A
SBLKSR	Diethyl phthalate Di-n-butyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	7 17 7 3	SB8D2-A, SB8D2B, SB8C4-1A, SB8C4-1B, SB8A2B, SB8A3A, SB8A2A, SB8A3B, SB8C4-1ARE, SB8A2ARE

Field ID	Analyte	New RL	Qualification
SB8D2-A	Methylene Chloride	10	U
SB8D2-A	Trichloroethene	5	U
SB8D2B	Methylene Chloride	9	U
SB8C4-1A	Methylene Chloride	8	U
SB8C4-1A	Trichloroethene	4	U
SB8C4-1B	Methylene Chloride	10	U
SB8C4-1B	Trichloroethene	6	U
SB8A2B	Methylene Chloride	9	U
SB8A2B	Xylene	4	U
SB8A3B	Methylene Chloride	10	U
SB8A3A	Methylene Chloride	9	U
SB8A3A	4-Methyl-2-Pentanone	5	U
SB8A2A	Methylene Chloride	920	U
SB8A2A	Acetone	1000	U
SB8A2A	2-Butanone	920	U
SB8D2-A	Diethyl phthalate	370	U
SB8D2-A	Di-n-butyl phthalate	370	U
SB8D2-A	Bis(2-ethylhexyl) phthalate	370	U
SB8D2-A	Di-n-octyl phthalate	370	U
SB8D2B	Diethyl phthalate	370	U

Field ID	Analyte	New RL	Qualification
SB8D2B	Di-n-butyl phthalate	370	U
SB8D2B	Bis(2-ethylhexyl) phthalate	370	U
SB8D2B	Di-n-octyl phthalate	370	U
SB8C4-1A	Diethyl phthalate	360	U
SB8C4-1A	Di-n-butyl phthalate	360	U
SB8C4-1A	Bis(2-ethylhexyl) phthalate	360	U
SB8C4-1A	Di-n-octyl phthalate	360	U
SB8C4-1ARE	Diethyl phthalate	360	U
SB8C4-1ARE	Di-n-butyl phthalate	360	U
SB8C4-1ARE	Bis(2-ethylhexyl) phthalate	360	U
SB8C4-1ARE	Di-n-octyl phthalate	360	U
SB8C4-1B	Diethyl phthalate	340	U
SB8C4-1B	Di-n-butyl phthalate	340	U
SB8C4-1B	Bis(2-ethylhexyl) phthalate	340	U
SB8C4-1B	Di-n-octyl phthalate	340	U
SB8A2B	Diethyl phthalate	370	U
SB8A2B	Di-n-butyl phthalate	370	U
SB8A2B	Bis(2-ethylhexyl) phthalate	370	U
SB8A2B	Di-n-octyl phthalate	370	U
SB8A2A	Diethyl phthalate	350	U
SB8A2A	Di-n-butyl phthalate	350	U
SB8A2A	Bis(2-ethylhexyl) phthalate	350	U
SB8A2A	Di-n-octyl phthalate	350	U
SB8A2ARE	Diethyl phthalate	350	U
SB8A2ARE	Di-n-butyl phthalate	350	U
SB8A2ARE	Bis(2-ethylhexyl) phthalate	350	U
SB8A3A	Diethyl phthalate	350	U
SB8A3A	Di-n-butyl phthalate	350	U
SB8A3A	Bis(2-ethylhexyl) phthalate	350	U
SB8A3A	Di-n-octyl phthalate	350	U
SB8A3B	Diethyl phthalate	350	U
SB8A3B	Di-n-butyl phthalate	350	U
SB8A3B	Bis(2-ethylhexyl) phthalate	350	U
SB8A3B	Di-n-octyl phthalate	350	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
M1861.D	Chloroethane	125	78-119		
	2-Butanone	150	55-146		
M1898.D	Chloroethane	150	78-119		
	Acetone	205	29-156		
	Vinyl Acetate	195	16-144		
	Chloroform	80	83-114		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	245	55-146		
	Carbon Tetrachloride	70	77-127		
	Bromodichloromethane	80	81-118		
	1,2-Dichloropropane	130	77-125		
	Dibromochloromethane	80	81-121		
	2-Hexanone	170	47-150		
	Tetrachloroethene	75	78-118		
M1915.D	Chloroethane	155	78-119		
	Vinyl Acetate	195	16-144		
	Chloroform	80	83-114		
	1,2-Dichloroethane	75	80-123		
	2-Butanone	190	55-146		
	1,1,1-Trichloroethane	70	72-128		
	Carbon Tetrachloride	65	77-127		
	Bromodichloromethane	80	81-118		
	1,2-Dichloropropane	130	77-125		
	Dibromochloromethane	80	81-121		
	Tetrachloroethene	75	78-118		
SBLKSR	Dimethyl phthalate	115	01-112		
	Diethyl phthalate	115	01-114		

Field ID	Analyte	Qualification
SB8D2-A	1,2-Dichloroethane	UJ
SB8D2-A	Carbon Tetrachloride	UJ
SB8D2-A	Bromodichloromethane	UJ
SB8D2-A	Dibromomethane	UJ
SB8D2B	1,2-Dichloroethane	UJ
SB8D2B	2-Butanone	J
SB8D2B	Carbon Tetrachloride	UJ
SB8D2B	Bromodichloromethane	UJ
SB8D2B	Dibromomethane	UJ
SB8D2B	Tetrachloroethene	J
SB8C4-1A	Chloroform	J
SB8C4-1A	1,2-Dichloroethane	UJ
SB8C4-1A	2-Butanone	J
SB8C4-1A	Carbon Tetrachloride	UJ

Field ID	Analyte	Qualification
SB8C4-1A	Bromodichloromethane	UJ
SB8C4-1A	Dibromomethane	UJ
SB8C4-1A	Tetrachloroethene	J
SB8C4-1B	Chloroform	J
SB8C4-1B	1,2-Dichloroethane	UJ
SB8C4-1B	2-Butanone	J
SB8C4-1B	Carbon Tetrachloride	UJ
SB8C4-1B	Bromodichloromethane	UJ
SB8C4-1B	Dibromomethane	UJ
SB8C4-1B	Tetrachloroethene	J
SB8A2B	Chloroform	J
SB8A2B	1,2-Dichloroethane	UJ
SB8A2B	2-Butanone	J
SB8A2B	Carbon Tetrachloride	UJ
SB8A2B	Bromodichloromethane	UJ
SB8A2B	Dibromomethane	UJ
SB8A2B	Tetrachloroethene	J
SB8A3B	Chloroform	J
SB8A3B	1,2-Dichloroethane	UJ
SB8A3B	2-Butanone	J
SB8A3B	Carbon Tetrachloride	UJ
SB8A3B	Bromodichloromethane	UJ
SB8A3B	Dibromomethane	UJ
SB8A3B	Tetrachloroethene	J
SB8A3A	Chloroform	J
SB8A3A	1,2-Dichloroethane	UJ
SB8A3A	2-Butanone	J
SB8A3A	Carbon Tetrachloride	UJ
SB8A3A	Bromodichloromethane	UJ
SB8A3A	Dibromomethane	UJ
SB8A3A	Tetrachloroethene	J
SB8C4-1A	Dimethyl phthalate	J
SB8A3B	Dimethyl phthalate	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB8A3A	Terphenyl-d14	141	18-137	No Qual., only one fraction out
SB8A3A	2,4,6-Tribromophenol	131	19-122	No Qual., only one fraction out
SB8C4-1A	Terphenyl-d14	143	18-137	No Qual., only one fraction out
SB8A2A	Terphenyl-d14	178	18-137	No Qual., only one fraction out
SB8A2A	2,4,6-Tribromophenol	125	19-122	No Qual., only one fraction out
SB8A2ARE	Terphenyl-d14	162	18-137	No Qual., only one fraction out
SB8A2ARE	2,4,6-Tribromophenol	136	19-122	No Qual., only one fraction out

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12B1-1A	Chloroethane	123124	78-129	1	20
	Vinyl Acetate	174/179	29-156	63	20
	2-Butanone	162/177	16-144	3	20
	Carbon Tetrachloride	76/79	55-146	9	20
	4-Methyl-2-Pentanone	170/189	58-141	10	20
	2-Hexanone	166/189	47-150	13	20
	1,1,2-2-Tetrachloroethane	132/143	76-118	8	20
SB8A2B	Benzoic acid	271/158	01-474	53	
	2,4-Dinitrophenol	51/29	01-191	55	
	Di-n-octyl phthalate	139/152	4-146	9	

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes.

Field ID	Analyte	Qual
SB8D2-A	Acetone	U*
SB8D2B	Acetone	U*
SB8C4-1A	Acetone	U*
SB8C4-1B	Acetone	U*
SB8A2B	Acetone	U*
SB8A3B	Acetone	U*
SB8A3A	Acetone	U*

* Professional Judgement

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98A042, 99A014A (SPLP), and 98L232A (SPLP)

Reviewer: Craig Johnson

Date Reviewed: February 23, 1999

Field ID	Field ID
SB12B1-A1 MS/MSD	SB8I1-1A SPLP
SB12B1-1B	SB17A2-1A SPLP
SB12B1-1A	SB17A2-2A SPLP
FB010899	SB27E2-1A SPLP
SB12B2-1A	
SB12B2-1B	
SB08K2-1A	
SB08K2-1B	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC, PCBs, total metals, mercury, total cyanide, TOC, and TPH were received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated surrogate recoveries for PCBs and MS/MSD recoveries for metals analysis were outside criteria. Review of the PCB forms indicated all surrogate recoveries were within criteria. MS/MSD recoveries for metals analyses are addressed below. No additional problems were noted in the laboratory case narrative. While not noted in the laboratory case narrative, review of the data indicated method blank contamination. This is addressed in the method blank section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes:

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1W	Calcium Zinc	0.0288J (mg/L) 0.00285J (mg/L)	All in SDG

Field ID	Analyte	New RL	Qualification

The values reported in the metals method blank for water samples were comparable to those values reported in the rinsate sample. Since the values were comparable and it was not determined if the contamination was due to method blank or rinsate blank data, no qualification of data was required. The soil samples associated with the rinsate sample were greater than 5x the values detected in the rinsate sample and did not require qualification.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
NA					

Field ID	Analyte	Qualification
NA		

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action
NA				

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes for PCBs, metals and cyanide.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12B1-1A	Antimony	72/75	80-120	2	20
SB12B1-1A	Iron	38/39	80-120	0	20
SB12B1-1A	Manganese	78/12	80-120	27	20

Field ID	Analyte	Qualification
SB12B1-1A	Antimony	UJ
SB12B1-1A	Iron	J
SB12B1-1A	Manganese	J

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes, mercury.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

??

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98K191 (EMAX)

Reviewer: John D. Keith

Date Reviewed: January 24, 1999

Sample Identification #	Sample Identification #
SB10A-1A	SB19A1-2A
SB10A1-1B	SB19A1-2B
SB10A1-2A	SB19A1-1A
SB10A1-2B	SB19A1-1B
SB10A1-3A	SB19A1-3A
SB10A1-3B	SB19A1-3B
SB22A1-1A	SB22A1-1B
SB22A1-2A	SB22A1-2C
SB22A1-3B	SB19A1-4A
SB19A1-4B	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC, PCBs, total metals, mercury, total cyanide, TOC, and TPH were received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative did not indicate that samples were extracted past their holding times.

SVOC surrogate recoveries were within QC limits except for K191-5 and 20.

SVOC MS/MSD recoveries were outside limits for 9 MS and 11 MSD. Metals MS/MSD recoveries were outside limits for aluminum, antimony, iron, magnesium, and manganese.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

No, the holding times for SPLP extraction were missed as summarized in the following table:

Field ID	Sampling Date	Extraction Date	Holding Time Exceedance	Holding Time Criteria
SPLP-SVOC				
SB22A1-1A	11-19-98	12-08-98	20	14
SB22A1-2A	11-19-98	12-08-98	20	14
SB22A1-3A	11-19-98	12-08-98	20	14
SPLP-PCBs				
SB19A1-1A	11-18-98	12-08-98	21	14

The SPLP SVOC and SPLP PCB data were qualified as estimated (**J**) based on missed holding times.

The sample receipt form indicated that insufficient ice was used in the sample cooler, and the temperature of the cooler was measured at 13°C upon arrival at the laboratory. No data qualifications were made due to poor sample preservation.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes:

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Beryllium	0.0331	SB10A-1A, SB19A1-2A, SB10A1-1B, SB19A1-2B, SB10A1-2A, SB19A1-1A, SB10A1-2B, SB19A1-1B, SB10A1-3A, SB19A1-3A, SB10A1-3B, SB19A1-3B
	Calcium	11.8	
	Iron	1.39	
	Zinc	1.67	
	Lead	0.309	

Field ID	Analyte	New RL	Qualification

No Qual. all samples concentration are > 5x blank concentration.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB10A1-3A	2-Fluorophenol	18	25-135	No Qual*
SB10A1-3A	Nitrobenzene	23	25-135	No Qual*
SB10A1-3ARE	2-Fluorobiphenyl	33	34-135	No Qual*
SB10A1-3ARE	2-Fluorophenol	17	25-135	No Qual*
SB19A1-1B	2-Fluorobiphenyl	26	34-135	All ND samples Qual. with UJ.
SB19A1-1B	2-Fluorophenol	13	25-135	All ND samples Qual. with UJ.
SB19A1-1B	Nitrobenzene	16	25-135	All ND samples Qual. with UJ.
SB19A1-1B	Phenol	18	25-135	All ND samples Qual. with UJ.
SB19A1-1BRE	2-Fluorobiphenyl	26	34-135	All ND samples Qual. with UJ.
SB19A1-1BRE	2-Fluorophenol	15	25-135	All ND samples Qual. with UJ.
SB19A1-1BRE	Nitrobenzene	18	25-135	All ND samples Qual. with UJ.
SB19A1-1BRE	Phenol	20	25-135	All ND samples Qual. with UJ.
SB22A1-1B	2-Fluorobiphenyl	31	34-135	No Qual*

* No qualification made because only one fraction outside limits.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes for SVOC, PCBs, metals and cyanide.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB22A1-3A	4,6-Dinitro-2-Methylphenol	0/0	25-144	0	30
SB22A1-3A	Anthracene	122/88	35-175	32	30
SB22A1-3A	Benzo(a)anthracene	124/6	41-143	6	30
SB22A1-3A	Benzo(a)pyrene	139/70	31-135	70	30
SB22A1-3A	Benzo(b)fluoranthene	-3/-171	27-135	-171	30
SB22A1-3A	Benzo(k)fluoranthene	330/381	27-135	14	30
SB22A1-3A	Bis(2-Chloroisopropyl)ether	103/122	26-175	200	30
SB22A1-3A	Di-n-octyl phthalate	188/197	28-137	4	30
SB22A1-3A	Fluoranthene	87/-4	37-135	-4	30
SB22A1-3A	Fluorene	166/101	38-149	48	30
SB22A1-3A	Hexachlorobenzene	137/146	36-143	146	30
SB22A1-3A	Hexachlorocyclopentadiene	0/0	31-135	0	30
SB22A1-3A	Indeno(1,2,3-cd)pyrene	58/38	25-170	38	30
SB22A1-3A	Naphthalene	125/142	40-135	13	30
SB22A1-3A	Phenanthrene	173/-13	44-135	232	30
SB22A1-3A	Pyrene	199/21	37-146	21	30
SB22A1-3A	Aluminum	41/143	80-120	111	30
SB22A1-3A	Antimony	67/67	80-120	1	30
SB22A1-3A	Iron	-92/201	80-120	537	30
SB22A1-3A	Magnesium	78/94	80/120	18	30
SB22A1-3A	Manganese	73/111	80-120	41	30
SB22A1-3A	Antimony	58/63	80-120	7	30

Field ID	Analyte	Qualification
SB22A1-3A	Aluminum	J
SB22A1-3A	Antimony	J
SB22A1-3A	Iron	J
SB22A1-3A	Magnesium	J
SB22A1-3A	Manganese	J
SB22A1-3A	Antimony	J

SB22A1-3A sample already qualified as UJ.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No, see MS/MSD.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L191A

Reviewer: Robert Mallisee

Date Reviewed: 1/25/99

Sample Identification #	Sample Identification #
SB10A1-1A	SB19A1-3A
SB10A1-1B	SB19A1-3B
SB10A1-2A	SB22A1-1A
SB10A1-2B	SB22A1-1B
SB10A1-3A	SB22A1-2C
SB10A1-3B	SB22A1-3A
SB10A1-2A	SB22A1-3B
SB19A1-2B	SB22A1-4A
SB19A1-1A	SB22A1-4B
SB19A1-1B	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC was received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

No.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No:

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

NA.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

OR

MS/MSD ID	Analyte	MS/MSD/RPD Rec	Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

No.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98K237 (EMAX)

Reviewer: John D. Keith

Date Reviewed: 01-25-99

Sample Identification #	Sample Identification #
SB24A1-1A	SB24A4-1B
SB24A1-1B	SB50A1-1A
SB24A1-2A	SB24A3-1A
SB24A1-2B	SB24A4-2A
SB24A4-1A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC, PCBs, total metals, mercury, total cyanide, TOC, and TPH were received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated one sample labeled as SB24A4-2B should be SB24A4-2B. The laboratory case narrative did not indicate that samples were extracted past their holding times. This issue is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

No, the holding time for TOC were missed as summarized in the following table:

Field ID	Sampling Date	Analysis Date	Holding Time Exceedance	Holding Time Criteria
SB24A1-2A	11-23-98	12-28-98	35	28
SB24A3-1A	11-24-98	12-28-98	34	28

The TOC data for samples SB24A1-21 and SB24A3-1A were qualified as estimated (**J**) based on missed holding times.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Aluminum Cadmium Calcium Iron Nickel Zinc	6.64 0.214 23.3 1.41 0.893 1.24	SB24A1-1A, SB24A1-1B, SB24A1-2A, SB24A1-2B, SB24A4-1A, SB24A4-1B, SB50A1-1A, SB24A3-1A
MBLK2S	Calcium	2.59	SB24A4-2A
MBLK2S	Zinc	0.478	SB24A4-2A
IPL011SB	Lead Selenium	0.265 0.507	SB24A1-1A, SB24A1-1B, SB24A1-2A, SB24A1-2B, SB24A4-1A, SB24A4-1B, SB50A1-1A, SB24A3-1A
IPL018SB	Lead	0.29	SB24A4-2A

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB24A4-2A	2,4,6-Tribromophenol	0	25-144	None

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB24A1-2A	1,2,4-Trichlorobenzene	26/62	34-152	62	30
SB24A1-2A	1,2-Dichlorobenzene	27/52	32-135	62	30
SB24A1-2A	2,4-Dichlorophenol	26/62	36-135	62	30
SB24A1-2A	2,4-Dimethylphenol	28/60	35-149	60	30
SB24A1-2A	2,4-Dinitrophenol	0/0	25-161	0	30
SB24A1-2A	2-Chloronaphthalene	32/56	50-135	55	30
SB24A1-2A	2-Chlorophenol	26/50	31-135	62	30
SB24A1-2A	2-Methylnaphthalene	28/54	31-135	61	30
SB24A1-2A	2-Nitrophenol	27/54	34-135	68	30
SB24A1-2A	4,6-Dinitro-2-Methylphenol	14/29	25-144	70	30
SB24A1-2A	4-Chloroaniline	27/51	35-146	62	30
SB24A1-2A	Acenaphthylene	36/63	37-135	54	30
SB24A1-2A	bis(2-Chloroethoxyl)methane	27/53	39-135	64	30
SB24A1-2A	bis(2-Chloroethyl)ether	27/50	34-135	60	30
SB24A1-2A	bis(2-Chloroisopropyl)ether	23/44	26-175	64	30
SB24A1-2A	Hexachlorocyclopentadiene	15/32	31-135	76	30
SB24A1-2A	Hexachloroethane	24/48	25-163	69	30
SB24A1-2A	Naphthalene	29/54	40-135	61	30
SB24A1-2A	Nitrobenzene	30/57	36-143	64	30
SB24A1-2A	Pentachlorophenol	34/56	38-146	48	30
SB24A1-2A	Aluminum	211/150	80-121	34	20
SB24A1-2A	Antimony	62/65	80-120	6	20
SB24A1-2A	Barium	187/99	80-120	62	20

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB24A1-2A	Calcium	82/111	80-120	30	20
SB24A1-2A	Iron	130/536	80-120	122	20
SB24A1-2A	Manganese	86/214	80-120	85	20
SB24A1-2A	Zinc	123/78	80-120	78	20

All RPDs were outside maximum limit.

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98K245 (EMAX)

Reviewer: John D. Keith

Date Reviewed: January 25, 1999

Sample Identification #	Sample Identification #
SB24A4-4A	SB24A4-4C
SB24A4-4B	FB112498
SB24A4-2A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC, PCBs, total metals, mercury, total cyanide, TOC, and TPH were received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative did not indicate that the samples were extracted past their holding times. This issue is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

No, the holding times for TOC were missed as summarized in the following table:

Field ID	Sampling Date	Analysis Date	Holding Time Exceedance	Holding Time Criteria
FB112498	11-24-98	01-06-99	42	28

The TOC data for samples FB112498 was qualified as estimated (**J**) based on missed holding times.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1W	Beryllium	0.00052	FB112498
MBLK1W	Chromium	0.00536	FB112498
MBLK1W	Iron	0.0103	FB112498
MBLK1W	Magnesium	0.0633	FB112498
MBLK1W	Manganese	0.00075	FB112498

Field ID	Analyte	New RL	Qualification
FB112498	Magnesium	1	ND

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes, with the exception of following:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	1,2-Dichlorobenzene	46/38	42-155	21	20
MBLK1W	1,3-Dichlorobenzene	44/34	36-125	25	20
MBLK1W	1,4-Dichlorobenzene	45/36	30-125	22	20
MBLK1W	2,4-Dimethylphenol	57/41	45-139	32	20
MBLK1W	2,4-Dinitrophenol	73/44	30-151	50	20
MBLK1W	2,4-Dinitrotoluene	77/61	39-139	22	20
MBLK1W	2-Chloronaphthalene	64/53	60-125	18	20
MBLK1W	3,3'-Dichlorobenzidine	0/60	29-175	200	20
MBLK1W	3-Nitroaniline	4/80	51-125	182	20
MBLK1W	4,6-Dinitro-2-methylphenol	86/66	26-134	25	20
MBLK1W	4-Chloroaniline	20/50	45-136	30	20
MBLK1W	4-Methylphenol	62/47	33-125	27	20
MBLK1W	4-Nitroaniline	20/77	40-143	116	20
MBLK1W	4-Nitrophenol	77/51	25-131	41	20
MBLK1W	Acenaphthylene	24/55	47-125	78	20
MBLK1W	Benzo(b)fluoranthene	69/53	37-125	26	20
MBLK1W	Benzo(g,h,i)perylene	70/44	34-149	23	20
MBLK1W	Bis(2-Chloroethoxy)methane	5/53	49-125	48	20

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	Di-n-octyl phthalate	68/54	38-125	24	20
MBLK1W	Dibenzo(a,h)anthracene	72/57	50-125	24	20
MBLK1W	Dimethyl phthalate	70/56	25-175	21	20
MBLK1W	Hexachlorocyclopentadiene	45/22	41-125	68	20
MBLK1W	Hexachloroethane	44/33	25-153	28	20
MBLK1W	Indeno(1,2,3-cd)pyrene	71/57	27-160	23	20
MBLK1W	n-Nitrosodipropylamine	63/51	37-125	22	20
MBLK1W	n-Nitrosodiphenylamine	29/60	27-125	71	20
MBLK1W	Pentachlorophenol	88/61	28-136	37	20
MBLK1W	Phenol	54/42	25-125	25	20
MBLK1W	Carbazole	82/189	25-175	79	20

Field ID	Analyte	Qualification
FB112498	1,2-Dichlorobenzene	UJ
FB112498	1,3-Dichlorobenzene	UJ
FB112498	1,4-Dichlorobenzene	UJ
FB112498	2,4-Dimethylphenol	UJ
FB112498	2,4-Dinitrophenol	UJ
FB112498	2,4-Dinitrotoluene	UJ
FB112498	2-Chloronaphthalene	UJ
FB112498	3,3'-Dichlorobenzidine	UJ
FB112498	3-Nitroaniline	UJ
FB112498	4,6-Dinitro-2-methylphenol	UJ
FB112498	4-Chloroaniline	UJ
FB112498	4-Methylphenol	UJ
FB112498	4-Nitroaniline	UJ
FB112498	4-Nitrophenol	UJ
FB112498	Acenaphthylene	UJ
FB112498	Benzo(b)fluoranthene	UJ
FB112498	Benzo(g,h,i)perylene	UJ
FB112498	Bis(2-Chloroethoxy)methane	UJ
FB112498	Di-n-octyl phthalate	UJ
FB112498	Dibenzo(a,h)anthracene	UJ
FB112498	Dimethyl phthalate	UJ
FB112498	Hexachlorocyclopentadiene	UJ
FB112498	Hexachloroethane	UJ
FB112498	Indeno(1,2,3-cd)pyrene	UJ
FB112498	n-Nitrosodipropylamine	UJ
FB112498	n-Nitrosodiphenylamine	UJ
FB112498	Pentachlorophenol	UJ
FB112498	Phenol	UJ
FB112498	Carbazole	UJ

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB24A4-4B	2-Fluorobiphenyl	11	34-135	None*
SB24A4-4BDL	Nitrobenzene-D5	147	25-135	None*
SB24A4-4C	Nitrobenzene-D5	247	25-135	None*
SB24A4-4C	Phenol_D5	152	25-135	None*
SB24A4-4CDL	Nitrobenzene-D5	170	25-135	None*

* No qualifications given since only one outside (in each fraction) outside limits per surrogate.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes for metals analyses by ICP and Trace ICP.

Were MS/MSD recoveries within evaluation criteria?

Yes, with the exception of the following:

MS/MSD ID	Analyte	MS/MSD/RPD Rec	Criteria
SB24A4-4B	Aluminum	148	80-120

Field ID	Analyte	Qualification
SB24A4-4B	Aluminum	J

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes for metals.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

NA.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98K245A

Reviewer: John D. Keith

Date Reviewed: 1/28/99

Sample Identification #	Sample Identification #
SB24A4-4A	SB24A4-2A
SB24A4-4B	SB24A4-4C

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

Metals

Chromium level in the blank MBLK1W was above RL. There was no corrective action since chromium in SPLP blank TXL004SB and all associated samples were non-detect.

This issues is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1W	Chromium	0.0861	SB24A4-4A, SB24A4-4B, SB24A4-2A, SB24A4-4C

Field ID	Analyte	New RL	Qualification

No Qual., all associated samples were ND.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

NA.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

OR

MS/MSD ID	Analyte	MS/MSD/RPD Rec	Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L018 (EMAX)

Reviewer: John D. Keith

Date Reviewed: January 24, 1999

Sample Identification #	Sample Identification #
SB24A2-1A	SB24A2-1B
SB23A1-3A	SB23A1-3B

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated the internal standard for sample SB23A1-3B had low recovery for the original analysis and also the reanalysis of SVOCs. The case narrative for metals indicated that the method blank was free of contamination at the reporting limit level. The case narrative did NOT indicate that metals were detected in the method blank above the method detection limit. These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Cadmium	0.12	SB24A2-1A
	Calcium	11.9	SB24A2-1B
	Chromium	0.894	SB23A1-3A
	Iron	10.1	SB23A1-3B
	Magnesium	7.61	
	Manganese	0.207	
	Nickel	1.11	

Field ID	Analyte	New RL	Qualification
SB24A2-1A	Cadmium	1.15	U
SB24A2-1B	Cadmium	1.16	U
SB23A1-3A	Cadmium	1.1	U
SB23A1-3B	Cadmium	1.12	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes for TRPH.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

?????????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L040

Reviewer: Robert Mallisee

Date Reviewed: 1/27/99

Sample Identification #	Sample Identification #
SB24C1-1A	SB22A1-3B
SB24C1-1B	SB22A1-1A
SB24B1-2A	SB22A1-1B
SB24B1-2B	SB19A1-3A
SB22A1-2A	SB19A1-3B
SB22A1-2B	SB19A1-4A
SB22A1-3A	SB19A1-4C

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated that SVCO surrogate recoveries were low for 2,4,6-Tribromophenol in L040-05, and high for Terphenyl-d14 in L040-09.

SVOC MS/MSD recoveries were outside limits for several MS and MSD analytes. Metals MS/MSD recoveries were outside limits for antimony, magnesium, and manganese in MS sample and antimony, calcium, iron, and manganese in MSD.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Cadmium	0.14	SB24C1-1A, SB24C1-1B, SB24B1-2A, SB24B1-2B

Field ID	Analyte	New RL	Qualification
SB24B1-2A	Cadmium	0.214	ND

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB22A1-2A	2,4,6-Tribromophenol	22	25-144	No Qual *
SB22A1-1A	Terphenyl-d14	151	32-136	No Qual *

* No Qualification of the data was made since only one surrogate per SVOC fraction in each sample was outside evaluation criteria.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, sample SB24C1-1A was used for the MS/MSD for SVOCs, sample SB24B1-2B for cyanide and antimony by GFAA. A non-SAEP sample was used for the MS/MSD sample associated with this lot during the analysis of metals by ICP and Trace ICP.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB24C1-1A	2,4-Dinitrophenol	0/0	25-161	0	30
SB24C1-1A	4,6-Dinitro-2-Methylphenol	18/0	25-144	18	30
SB24C1-1A	4-Nitroaniline	44/0	30-153	200	30
SB24C1-1A	4-Nitrophenol	0/0	25-141	0	30
SB24C1-1A	Acenaphthene	89/124	39-135	32	30
SB24C1-1A	Anthracene	22/78	35-175	112	30
SB24C1-1A	Benzo(a)anthracene	-69/50	41-143	1263	30
SB24C1-1A	Benzo(a)pyrene	-36/56	31-135	942	30
SB24C1-1A	Benzo(b)fluoranthene	-61/54	27-135	3155	30
SB24C1-1A	Benzo(k)fluoranthene	109/154	27-135	34	30
SB24C1-1A	Benzo(g,h,i)perylene	40/90	25-159	76	30
SB24C1-1A	Bis(2-Chloroisopropyl)ether	83/0	26-175	0	30
SB24C1-1A	Bis(2-Ethylhexyl) phthalate	140/147	25-139	5	30
SB24C1-1A	Chrysene	-16/59	45-143	343	30
SB24C1-1A	Fluoranthene	-166/14	37-135	238	30
SB24C1-1A	Hexachlorocyclopentadiene	0/18	31-135	18	30
SB24C1-1A	Indeno(1,2,3-cd)pyrene	39/89	25-170	79	30
SB24C1-1A	Pentachlorophenol	13/0	38-146	13	30
SB24C1-1A	Phenanthrene	-125/38	44-135	376	30
SB24C1-1A	Pyrene	-124/25	37-146	301	30
144-SB01-SS0.5	Antimony	60/64	80-120	7	20
144-SB01-SS0.5	Calcium	91/135	80-120	39	20
144-SB01-SS0.5	Iron	-36/-16	80-120	80	20
144-SB01-SS0.5	Magnesium	80/100	80-120	23	20
144-SB01-SS0.5	Manganese	78/72	80-120	8	20

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. Since the sample used for metals MS/MSD analysis was not a sample associated with SAEP, no metals data were qualified based on

MS/MSD data. Cyanide and antimony (GFAA) data were within evaluation criteria. No qualification of the data was done based on MS/MSD data.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

No.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

???????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L040A

Reviewer: John D. Keith

Date Reviewed: 1/28/99

Sample Identification #	Sample Identification #
SB24C1-1A	SB24B1-2A
SB24C1-1B	SB24B1-2B

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

VOC

The laboratory case narrative indicated that for SVOCs hexachlorocyclopentadiene was outside LCS QC limits and 2-Fluorobiphenyl was outside surrogate recovery QC limits.

Metals

Chromium level in the blank IPLO51WB was above RL. There was no corrective action since Chromium in SPLP blank TXL004SB and all associated samples were non-detect.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

No, the holding times for SVOCs were missed as summarized in the following table:

Field ID	Sampling Date	Analysis Date	Holding Time Exceedance	Holding Time Criteria
SB24C1-1A	12-1-98	12-23-98	8	14

The SVOC data for samples SB24C1-1A was qualified as _____ based on missed holding times.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1W	Chromium	0.0861	SB24C1-1A, SB24C1-1B, SB24B1-2A, SB24B1-2B

Field ID	Analyte	New RL	Qualification

No Qual., all associated samples were ND.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	Hexachlorocyclopentadiene	35/39	41-125	11	20

Field ID	Analyte	Qualification
SB24C1-1A	Hexachlorocyclopentadiene	UJ

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

NA.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

OR

MS/MSD ID	Analyte	MS/MSD/RPD Rec	Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

11.0 Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L066

Reviewer: John D. Keith

Date Reviewed: 1/28/99

Sample Identification #	Sample Identification #
SB10A1-3B	SB20A1-3A
SB10A1-2A	SB20A1-3B
SB10A1-2B	SB20A2-1A
SB50A1-3A	SB20A2-1B
FB120298	SB20A2-2A
SB19A1-5A	SB20A2-2B
SB19A1-5C	SB20A1-1A
SB19A1-6A	SB20A1-1B
SB19A1-6B	SB50A1-2A
SB19A1-2A	SB10A1-1A
SB19A1-2B	SB10A1-1B
SB19A1-1A	SB10A1-3A
SB19A1-1B	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

No, not all analytes were analyzed for the LCS and MS/MSD SVOC samples due to laboratory error at sample log-in.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

Sample SB19A1-6B was incorrectly logged in as SB19A1-613. The laboratory has been notified of the change.

This issues is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Calcium Iron Nickel	2.45 1.19 0.947	SB19A1-5A, SB19A1-5C, SB19A1-6A, SB20A1-3A, SB20A1-3B, SB20A2-1A, SB20A2-1B, SB20A2-2A, SB20A2-2B, SB20A1-1A, SB20A1-1B, SB50A1-2A, SB19A1-6B
IPL021WB	Calcium Manganese Zinc	0.0669 0.0113 0.00943	FB120298
MBLK1W	Thallium	0.00344	All in SDG

Field ID	Analyte	New RL	Qualification
FB120298	Calcium	0.116	U
FB120298	Manganese	0.0105	U
FB120298	Zinc	0.0116	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	3,3-Dichlorobenzidine	63/0	29-175	200	200
MBLK1W	3'-Nitroaniline	89/49	51-125	58	20
MBLK1W	4-Chloroaniline	65/0	45-136	200	20
MBLK1W	4-Nitroaniline	89/61	40-143	38	20

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	Hexachlorocyclopentadiene	28/31	41-125	13	20
MBLK1W	n-Nitrosodiphenylamine	69/46	27-125	40	20
MBLK1W	Sodium	82	80-120		

Field ID	Analyte	Qualification
FB120298	3-Nitroaniline	UJ
FB120298	4-Methylphenol	UJ
FB120298	Hexachlorocyclopentadiene	UJ
All detects in SDG	Sodium	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB19A1-1A	2,4,6-Tribromophenol	18	25-144	All analytes qualified J or UJ.
	2-Fluorobiphenyl	20	34-135	
	2-Fluorophenol	18	25-135	
	Nitrobenzene	19	25-135	
	Phenol	20	25-135	
	Terphenyl	25	32-136	
SB19A1-1ARE	2,4,6-Tribromophenol	14	25-144	All analytes qualified J or UJ.
	2-Fluorobiphenyl	20	34-135	
	2-Fluorophenol	12	25-135	
	Nitrobenzene	21	25-135	
	Phenol	19	25-135	
	Terphenyl	24	32-136	
SB20A1-3A	Decachlorobiphenyl	0	25-143	No Qual, all ND
SB20A2-2A	Tetrachloro-m-xylene	155	35-135	No Qual, surrogate on non-reporting column
SB50A1-2A	Decachlorobiphenyl	213	25-143	No Qual, surrogate on non-reporting column

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB19A1-5A	4-Nitrophenol	57/79	25-141	34	30
SB19A1-5A	Aluminum	196/187	80-12	187	30
SB19A1-5A	Antimony	61/62	80-20	62	30
SB19A1-5A	Calcium	78/78	80-120	78	30
SB19A1-5A	Chromium	79/79	80-120	79	30
SB19A1-5A	Cobalt	79/80	80-120	80	30
SB19A1-5A	Iron	99/127	80-120	127	30
SB19A1-5A	Sodium	76/75	80-120	75	30
SB19A1-5A	Lead	80/129	80-120	13	30

Field ID	Analyte	Qualification
SB19A1-5A	Aluminum	J
SB19A1-5A	Antimony	UJ
SB19A1-5A	Calcium	UJ
SB19A1-5A	Chromium	UJ
SB19A1-5A	Cobalt	UJ
SB19A1-5A	Iron	J
SB19A1-5A	Sodium	J*
SB19A1-5A	Lead	J

*Already Qual from LCS

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

Samples diluted are summarized in the following table:

Field ID	Analysis	Analyte	Dilution Factor
SB19A1-5C	SVOC	All	2
SB19A1-6A	SVOC	All	10
SB19A1-6B	SVOC	All	10
SB50A1-2A	SVOC	All	20
SB20A2-2A	PCBs	All	2

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L066A

Reviewer: Robert Mallisee

Date Reviewed: 1/25/99

Sample Identification #	Sample Identification #
SB19A1-6A	
SB50A1-2A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC was received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative did not indicate that the samples were extracted past their holding times. This issue is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

No, the holding time were missed as summarized in the following table:

Field ID	Sampling Date	Analysis Date	Holding Time Exceedance	Holding Time Criteria
SB19A1-6A	12-02-98	12-23-98	7	14
SB50A1-2A	12-02-98	12-23-98	7	14

The data for samples SB19A1-6A and SB50A1-2A were qualified as estimated (**UJ**) based on missed holding times.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No:

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

NA.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

OR

MS/MSD ID	Analyte	MS/MSD/RPD Rec	Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes.

Field ID	Analyte	Qual
SB50A1-2A	Bis(2-ethylhexyl) phthalate	U

The data for sample SB50A1-2A was qualified as non-detect (U) based on professional judgement.

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L098

Reviewer: Robert Mallisee

Date Reviewed: 1/26/99

Sample Identification #	Sample Identification #
SB17A1-1A	SB23A1-1B
SB17A1-1C	SB23A1-2A
SB17A3-1A	SB27E1-3A
SB17A3-1B	SB27E1-3C
SB17A3-5A	SB27E1-2A
SB17A-6A	SB27E1-2C
SB17A-6B	SB27E1-4A
SB17A3-7A	SB27E1-4C
SB17A3-7B	SB27E10-1A
SB17A3-2A	SB27E10-1C
SB17A3-2B	SB27E11-1A
SB17A3-8A	SB27E11-1B
SB17A3-8B	SB27E11-2A
SB17C1-1A	SB27E11-2C
SB51C1-1A	SB27E11-3A
SB17C1-1B	SB27E11-3B
SB23A1-1A	SB17A3-5B

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated that SVOC surrogate recoveries were within QC limits except for 2,4,6-tribromophenol in L098-11 and 26; 2,4,6-tribromophenol and 2-fluorobiphenyl in L098-18. PCB surrogate recoveries were within QC limits except for decachlorobiphenyl in L098-10.

SVOC MS/MSD recoveries were outside limits for 9 MS and 2 MSD. Metals MS/MSD recoveries were outside limits for aluminum, antimony, calcium, copper, iron, magnesium, manganese, and zinc.

Metals serial dilutions were within QC limits except potassium and zinc in sample L098-18 and calcium, copper, vanadium, and zinc in sample L098-27 were out of QC limits.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes:

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Cadmium, Iron, Potassium	0.126 1.11 372	SB17A1-1A, SB17A1-1C, SB17A3-1A, SB17A3-1B, SB17A3-5A, SB17A-6A, SB17A-6B, SB17A3-7A, SB17A3-7B, SB17A3-2A, SB17A3-2B, SB17A3-8A, SB17A3-8B, SB17C1-1A, SB51C1-1A, SB17C1-1B, SB23A1-1A, SB17A3-5B
MBLK2S	Cadmium Calcium, Iron, Zinc	0.0982, 4.61, 0.926, 0.544	SB23A1-1B, SB23A1-2A, SB27E1-3A, SB27E1-3C, SB27E1-2A, SB27E1-2C, SB27E1-4A, SB27E1-4C, SB27E10-1A, SB27E10-1C, SB27E11-1A, SB27E11-1B, SB27E11-2A, SB27E11-2C, SB27E11-3A, SB27E11-3B

Field ID	Analyte	New RL	Qualification
SB17A1-1A	Cadmium	0.568	ND
SB17A1-1A	Potassium	1400	ND
SB17A1-1C	Cadmium	0.421	ND
SB17A1-1C	Potassium	1370	ND
SB17A3-1B	Potassium	1730	ND
SB17A3-5A	Cadmium	0.368	ND
SB17A3-6A	Cadmium	0.371	ND
SB17A3-6B	Cadmium	0.324	ND
SB17A3-6B	Potassium	1830	ND

Field ID	Analyte	New RL	Qualification
SB17A3-7A	Cadmium	0.156	ND
SB17A3-7B	Cadmium	0.213	ND
SB17A3-2A	Cadmium	0.589	ND
SB17A3-8A	Cadmium	0.0793	ND
SB17A3-8B	Cadmium	0.183	ND
SB17A3-5B	Cadmium	0.297	ND
SB17A3-5B	Potassium	1480	ND
SB17C1-1A	Cadmium	0.38	ND
SB17C1-1A	Potassium	1730	ND
SB51C1-1A	Cadmium	0.63	ND
SB23A1-1A	Cadmium	0.294	ND
SB23A1-1B	Cadmium	0.167	ND
SB27E1-2A	Cadmium	0.099	ND
SB27E1-4A	Cadmium	0.0955	ND
SB27E10-1A	Cadmium	0.23	ND
SB27E11-1A	Cadmium	0.278	ND

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB17A3-2B	2,4,6-Tribromophenol	19	25-144	No Qual.*
SB23A1-1B	2,4,6-Tribromophenol	19	25-144	No Qual.*
SB23A1-1B	2-Fluorobiphenyl	32	34-135	No Qual.*
SB27E1-4C	2,4,6-Tribromophenol	12	25-144	No Qual.*
SB17A3-2A	Decachlorobiphenyl	146/166	25-143	J

* No qualification made because only one fraction outside limits.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No, see following table.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB27E10-1A	2-Chloronaphthalene	49/56	50-135	13	30
SB27E10-1A	Bis(2-chloroethyl)ether	32/31	34-135	2	30
SB27E10-1A	Hexachlorobutadiene	11/11	31-135	3	30
SB23A1-2A	2-Dinitrophenol	3/44	25-161	41	30
SB23A1-2A	2-Chloronaphthalene	47/74	50-135	45	30
SB23A1-2A	2-Nitrophenol	27/73	34-135	91	30
SB23A1-2A	4,6-Dinitro-2-Methylphenol	9/107	25-144	169	30
SB23A1-2A	Hexachlorocyclopentadiene	6/66	31-135	60	30
SB27E10-1A	Aluminum	10/0	80-120	216	20
SB27E10-1A	Antimony	79/79	80-120	0	20
SB27E10-1A	Calcium	79/77	80-120	2	20
SB27E10-1A	Copper	81/77	80-120	5	20
SB27E10-1A	Iron	29/0	80-120	203	20
SB27E10-1A	Magnesium	81/80	80-120	1	20
SB27E10-1A	Manganese	110/87	80-120	23	20
SB27E10-1A	Zinc	80/79	80-120	1	20
SB23A1-1A	Antimony	79/75	80-120	5	20
SB23A1-1A	Copper	38/55	80-120	13	20
SB23A1-1A	Iron	-141/-33	80-120	8	20
SB23A1-1A	Manganese	41/50	80-120	50	20
SB23A1-1A	Zinc	64/69	80-120	3	20

All SVOC RPDs, except for 4 analytes, were outside maximum limit.

Field ID	Analyte	Qualification
SB27E10-1A	Antimony	UJ
SB23A1-1A	Antimony	UJ

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

Yes? (SB51C1-1A)

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L098A

Reviewer: Robert Mallisee

Date Reviewed: 2/1/99

Sample Identification #	Sample Identification #
SB17A1-1A	SB17A3-7A
SB17A3-1A	SB17A3-2A
SB17A3-5A	SB17A3-8A
SB17A3-6A	SN23A1-1A

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated no problems.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB17A1-1A	Decachlorobiphenyl	169/149	34-133	No Qual, analytes ND
SB17A3-1A	Decachlorobiphenyl	148/145	34-133	No Qual, analytes ND
SB17A3-5A	Decachlorobiphenyl	165/148	34-133	No Qual, analytes ND
SB17A3-7A	Decachlorobiphenyl	145/147	34-133	No Qual, analytes ND
SB17A3-2A	Decachlorobiphenyl	156/144	34-133	No Qual, analytes ND
SB17A3-8A	Decachlorobiphenyl	145/157	34-133	No Qual, analytes ND
SB23A1-1A	Decachlorobiphenyl	164/150	34-133	No Qual, analytes ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

NA.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L107

Reviewer: John D. Keith

Date Reviewed: 1/28/99

Sample Identification #	Sample Identification #
SB08L1-7A	SB09A2-1C
SB08L1-7C	SB09A1-4A
SB09B4-1A	SB09A1-4B
SB09B4-1B	SB09A1-3A
SB09B6-1A	SB09A1-3B
SB09B6-1C	FB120798
SB09B8-1A	SB50A1-4A
SB09B8-1B	SB14A2-2A
SB09B10-1A	SB14A2-2C
SB0910-1B	SB14A2-1A
SB09C2-1A	SB14A2-1C
SB09C2-1B	SB17A4-1A
SB09A1-1A	SB17A4-1C
SB09A1-1B	SB17A3-3A
SB09A1-2A	SB17A3-3B
SB09A1-2B	SB17A3-4A
SB09A2-1A	SB17A3-4B

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

SVOC

The laboratory case narrative indicated that the surrogate recovery for DCB was outside QC limits on sample 98L098-10. MS/MSD samples had low recoveries

reported on 15 analytes for 98L107-17 and 4 analytes on 98L107-33. LCS had Hexachlorocyclopentadiene outside QC limits for batch SVL019SL.

PCB

The laboratory case narrative indicated that the surrogate recovery outside QC limits were TCMX and DCB on sample 98L107-01, TCMX on sample 98L1207-03, DCB on sample 98L107-07, TCMX and DCB on sample 98L107-13, TCMX and DCB on sample 98L107-15, TCMX and DCB on sample 98L107-17, TCMX and DCB on sample 98L107-21, TCMX and DCB on sample 98L107-23, DCB on sample 98L107-31, and DCB on sample 98L107-35. MS/MSD sample 98l107-17 was spiked, however, to sample matrix interferences, the spikes were diluted out, and could not be reported. Samples 98L107-15, -17, and –23 were reported ND with elevated reporting limits, due to dilutions being required due to the high levels presence of non-target analytes.

Metals

MS/MSD were outside QC limits on sample L107-17 for 4 metals in MS and 2 metals in MSD and on sample L107-21 for 4 metals in MS and 10 metals in MSD.

Mercury

MS samples had low recoveries for samples 98L107-17 and the duplicate of 98L107-27.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Nickel	0.735	All in SDG
MBLK1W	Calcium	0.042	All in SDG
MBLK1W	Iron	0.00579	All in SDG
MBLK1S	Lead	0.283	All in SDG

Field ID	Analyte	New RL	Qualification
FB120798	Calcium	0.112	U
FB120798	Iron	0.05	U
SB14A2-1C	Nickel	3.11	U
SB17A4-1C	Nickel	3.61	U

No Qual., all associated samples were ND.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK2S	Hexachlorocyclopentadiene	24	31-135		

Field ID	Analyte	Qualification
All in SDG	Hexachlorocyclopentadiene	UJ

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB08L1-7A	Tetrachloro-m-xylene Decachlorobiphenyl	177/0 1308/1267	35-135 25-143	Qual 1st column detects (J) and 2nd column ND (R)
SB09B4-1A	Tetrachloro-m-xylene	57/294	35-135	2nd column detects (J)
SB09B8-1A	Decachlorobiphenyl	211/177	25-143	No Qual, all ND.
SB09C2-1A	Tetrachloro-m-xylene Decachlorobiphenyl	125/0 0/1892	35-135 25-143	Qual both columns - detects (J) and non-detects (UJ)
SB09A1-1A	Tetrachloro-m-xylene Decachlorobiphenyl	198/0 436/0	35-135 25-143	Qual both columns non-detects (UJ)
SB09A1-4A	Tetrachloro-m-xylene Decachlorobiphenyl	0/0 10831/13782	35-135 25-143	Qual both columns - detects (J) and non-detects (UJ)
SB09A1-3A	Tetrachloro-m-xylene Decachlorobiphenyl	164/0 0/46772	35-135 25-143	Qual both columns - detects (J) and non-detects (UJ)
SB17A4-1A	Decachlorobiphenyl	148/202	25-143	Qual both columns - detects (J)
SB17A3-3A	Decachlorobiphenyl	177/221	25-143	Qual both columns - detects (J)
SB17A3-4A	Decachlorobiphenyl	177/215	25-143	Qual both columns - detects (J)

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB09A1-2A	1,2-Dichlorobenzene	36/31	32-135	15	30
SB09A1-2A	2,4-Dimethylphenol	33/29	35-149	13	30
SB09A1-2A	2,4-Dinitrophenol	4/8	25-161	4	30
SB09A1-2A	2-Chloronaphthalene	50/42	50-135	18	30
SB09A1-2A	2-Chlorophenol	36/30	31-135	18	30
SB09A1-2A	2-Nitrophenol	34/31	34-135	9	30
SB09A1-2A	4,6-Dinitro-2-Methylphenol	19/24	25-144	26	30
SB09A1-2A	4-Chloroaniline	34/33	35-146	3	30
SB09A1-2A	Benzo(g,h,i)perylene	3/3	25-159	0	30
SB09A1-2A	Bis(2-Chloroethyloxy)methane	36/31	39-135	13	30
SB09A1-2A	Bis(2-Chloroethyl)ether	31/28	34-135	9	30
SB09A1-2A	Hexachlorocyclopentadiene	1/1	31-135	0	30
SB09A1-2A	Hexachloroethane	25/21	25-163	16	30
SB09A1-2A	Naphthalene	39/36	40-135	9	30
SB09A1-2A	Nitrobenzene	33/29	36-143	12	30
SB17A3-3A	2,4-Dinitrophenol	1/0	25-161	1	30
SB17A3-3A	4,6-Dinitro-2-Methylphenol	10/13	25-144	24	30
SB17A3-3A	Hexachlorocyclopentadiene	23/18	31-135	23	30
SB17A3-3A	Pentachlorophenol	25/32	38-146	23	30
SB09A1-4A	Iron	71	75-125		
SB09A1-2A	Aluminum	273/115	80-120	17	20
SB09A1-2A	Antimony	69/71	80-120	4	20
SB09A1-2A	Iron	418/104	80-120	20	20
SB09A1-2A	Manganese	121/117	80-120	1	20
SB09A1-4A	Aluminum	-34/73	80-120	11	20
SB09A1-4A	Barium	64/63	80-120	0	20
SB09A1-4A	Calcium	74/86	80-120	7	20
SB09A1-4A	Chromium	178/117	80-120	15	20
SB09A1-4A	Cobalt	73/77	80-120	5	20
SB09A1-4A	Iron	-136/299	80-120	25	20
SB09A1-4A	Magnesium	72/91	80-120	10	20
SB09A1-4A	Manganese	32/60	80-120	10	20
SB09A1-4A	Nickel	74/81	80-120	5	20

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB09A1-4A	Zinc	132/157	80-120	8	20
SB09A1-4A	Lead	0/-9	80-120	9	20
SB09A1-2A	Mercury	70	75-125		

Field ID	Analyte	Qualification
SB09A1-2A	Antimony	UJ
SB09A1-2A	Manganese	UJ
SB09A1-4A	Barium	J
SB09A1-4A	Calcium	J
SB09A1-4A	Chromium	J
SB09A1-4A	Cobalt	J
SB09A1-4A	Magnesium	J
SB09A1-4A	Manganese	J
SB09A1-4A	Nickel	J
SB09A1-4A	Zinc	J
SB09A1-2A	Mercury	J

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

Yes.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
SB08L1-7A	PCB		100
SB09C2-1A	PCB		100
SB09A1-1A	PCB		100
SB09A1-2A	PCB		100
SB09A1-4A	PCB		1000

Qualifications mad based on surrogate data.

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L107A

Reviewer: Robert Mallisee

Date Reviewed: 2/3/99

Sample Identification #	Sample Identification #
SB08L1-7A	SB09A2-1C
SB08L1-7C	SB09A1-4A
SB09B4-1A	SB09A1-4B
SB09B4-1B	SB09A1-3A
SB09B6-1A	SB09A1-3B
SB09B6-1C	FB120798
SB09B8-1A	SB50A1-4A
SB09B8-1B	SB14A2-2A
SB09B10-1A	SB14A2-2C
SB0910-1B	SB14A2-1A
SB09C2-1A	SB14A2-1C
SB09C2-1B	SB17A4-1A
SB09A1-1A	SB17A4-1C
SB09A1-1B	SB17A3-3A
SB09A1-2A	SB17A3-3B
SB09A1-2B	SB17A3-4A
SB09A2-1A	SB17A3-4B

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

LCS was outside QC limits on sample IPL058SL by 4%.

This issue is addressed in the appropriate section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK2S	Antimony	**124**/117	80-120	6	30

Field ID	Analyte	Qualification
All detects in SDG	Antimony	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

???.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L107B

Reviewer: Robert Mallisee

Date Reviewed: 2/10/99

Sample Identification #	Sample Identification #
SB09C2-1A	SB17A3-3A
SB09A1-1A	SB17A3-4A
SB14A2-2A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

PCB

Surrogate recoveries were outside QC limits on DCB for all samples. These issues are discussed below in the following sections.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB09C2-1A	Decachlorobiphenyl	157/147	34-133	No Qual, all analytes ND
SB09A1-1A	Tetrachloro-m-xylene	56/44	34-133	No Qual, all analytes ND
SB09A1-1A	Decachlorobiphenyl	171/159	34-133	No Qual, all analytes ND
SB14A2-2A	Tetrachloro-m-xylene	46/36	34-133	No Qual, all analytes ND
SB14A2-2A	Decachlorobiphenyl	161/153	34-133	No Qual, all analytes ND
SB17A3-3A	Tetrachloro-m-xylene	47/36	34-133	No Qual, all analytes ND
SB17A3-3A	Decachlorobiphenyl	159/146	34-133	No Qual, all analytes ND
SB17A3-4A	Decachlorobiphenyl	162/147	34-133	No Qual, all analytes ND
MBLK1S	Decachlorobiphenyl	140/132	34-133	No Qual, all analytes ND
MBLK2S	Decachlorobiphenyl	154/149	34-133	No Qual, all analytes ND
MBLK3S	Decachlorobiphenyl	169/159	34-133	No Qual, all analytes ND
MBLK1S	Decachlorobiphenyl	145/135-141/130	34-133	No Qual, all analytes ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L122

Reviewer: John D. Keith

Date Reviewed: 2-2-99

Sample Identification #	Sample Identification #
SB09B7-1A	SB31A1-1C
SB09B7-1C	SB31A1-3A
SB09B11-1A	SB31A1-3C
SB09B11-1C	SB31A1-2A
SB08L1-6A	SB31A1-2C
SB08L1-6C	SB31A2-1A
SB12A1-1A	SB31A2-1C
SB12A1-1C	SB28A1-2A
SB12E2-1A	SB28A1-2C
SB12E2-1C	SB28A2-2A
SB20A1-2A	SB28A2-2C
SB20A1-2B	SB31A2-2A
SB24B1-1A	SB31A2-2B
SB24B1-1B	SB31A3-1A
SB24D1-1A	SB31A3-1B
SB24D1-1B	SB31A3-2A
SB25A1-1A	SB31A3-2B
SB25A1-1B	SB50A1-5A
SB28A1-1A	SB51B7-1A
SB28A1-1C	SB27E1-1A
SB28A2-1A	FB120898
SB28A2-1C	FB120998
SB31A1-1A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

Collection date in the report for sample FB120998 was listed as 12/8/98, the correct date is 12/9/98. The following samples were incorrectly listed on the chain of custody, per instructions form Bertolotti (W-C) on 12/15/98, the chain of custody was corrected: 98L122-02, -06, and 40 (SB09B7-1B, SB08L1-6B, and SB31A3-2 respectively). The correct sample ID's should be SB09B7-1C, SB08L1-6C, and SB31A2-2B, respectively.

The laboratory case narrative indicated that the surrogate recovery for 2,4,6-Tribromophenol was outside QC limits on sample 98L122-43. MS/MSD samples had low recoveries reported on 2 analytes for 98122-01. LCS had Hexachlorocyclopentadiene outside QC limits for batch SVL022SL and the RPD outside QC limits for batch SVL022S. Instrument performance and calibration had Phenol's %D exceeding the QC limit by 2% on DCC RAB260 (run on 1/18/98).

PCB

The laboratory case narrative indicated that the surrogate recovery outside QC limits were DCB on sample L122-05

Metals

MS/MSD were outside QC limits on sample 98L122-01 for 8 metals, for 3 metals on sample 98L122-13, and for 7 metals for sample 98L122-43. Method blank sample IPL067SB had calcium, iron, and zinc detected, sample IPL065SB had beryllium, cadmium, calcium, iron, manganese, and zinc detected, sample IPL066SB had cadmium and zinc detected, sample IPA014SB had calcium detected, sample IPL063WB had Aluminum, calcium, iron, manganese vanadium, and zinc detected.

Mercury

MS samples had low recoveries for samples L122-13.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK2S	Beryllium	0.257	None
	Cadmium	0.106	
	Calcium	4.7	
	Iron	1.08	
	Manganese	0.142	
	Zinc	0.309	
MBLK3S	Cadmium	0.138	None
	Zinc	0.297	
MBLK3S	Calcium	7.04	All samples in subset IPL067SB
	Iron	0.88	
	Zinc	0.416	
MBLK4S	Calcium	4.52	None
MBLK1W	Aluminum	0.275	FB120998, FB123898, FS120898
	Calcium	0.672	
	Iron	0.00877	
	Manganese	0.00086	
	Silver	0.00604	
	Vanadium	0.00485	
	Zinc	0.0134	

Field ID	Analyte	New RL	Qualification
SB08L1-6C	Cadmium	0.115	U
SB20A1-2A	Cadmium	0.201	U
SB20A1-2B	Cadmium	0.3	U
SB25A1-1A	Cadmium	0.155	U
SB25A1-1B	Cadmium	0.119	U
SB28A1-1A	Cadmium	0.14	U
SB28A1-1C	Cadmium	0.113	U
SB28A2-1A	Cadmium	0.274	U
SB28A2-1C	Cadmium	0.156	U
SB31A1-1A	Cadmium	0.145	U
SB31A1-1C	Cadmium	0.101	U
SB31A1-3A	Cadmium	0.391	U
SB31A1-2A	Cadmium	0.121	U
SB28A1-2A	Cadmium	0.134	U
SB31A2-2A	Cadmium	0.118	U
SB31A3-1A	Cadmium	0.181	U
SB27E1-1A	Cadmium	0.273	U

Field ID	Analyte	New RL	Qualification
FB120898	Calcium	0.16	U
FB120898	Iron	0.9	U
FB120898	Zinc	0.0047	U
FB120898	Calcium	0.28	U
FB120898	Zinc	0.0113	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1S	2,4-Dinitrophenol	31/42	25-161	31	30
	Hexachlorocyclopentadiene	29/39	31-135	28	30

Field ID	Analyte	Qualification
All in SDG	2,4-Dinitrophenol	UJ/J
All in SDG	Hexachlorocyclopentadiene	UJ/J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB27E1-1A	2,4,6-Tribromophenol	5	25-144	Qual all ND data in fraction (R), detected data (J)
SB08L1-6A	Decachlorobiphenyl	155/161	25-143	Detected data (J)
SB12A1-1A	Decachlorobiphenyl	103/177	25-143	Detected data (J)

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB09B7-1A	2,4-Dinitrophenol	21/26	25-161	21	30
	Hexachlorobutadiene	17/17	31-135	3	30
SB09B7-1A	Aluminum	-187/-180	80-120	1	20
	Antimony	75/77	80-120	2	20
	Barium	62/62	80-120	0	20
	Calcium	-54/-49	80-120	4	20
	Iron	57/27	80-120	3	20
	Magnesium	37/37	80-120	0	20
	Manganese	-21/-29	80-120	3	20
	Potassium	78/81	80-120	3	20
SB24B1-1A	Aluminum	110/146	80-120	5	20
	Antimony	75/74	80-120	2	20
	Iron	50/125	80-120	7	20
SB27E1-1A	Antimony	70/68	80-120	2	20
	Barium	94/72	80-120	14	20
	Calcium	71/23	80-120	7	20
	Iron	100/126	80-120	2	20
	Manganese	88/78	80-120	3	20
	Vanadium	85/77	80-120	7	20
	Zinc	86/77	80-120	6	20
SB27E1-1A	Lead	85/79	80-120	6	20
SB24B1-1A	Mercury	54	75-125		

Field ID	Analyte	Qualification
SB24B1-1A	Mercury	J

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

????.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L122A

Reviewer: Robert Mallisee

Date Reviewed: 2-3-99

Sample Identification #	Sample Identification #
SB09B7-1A	SB31A1-1C
SB09B7-1C	SB31A1-3A
SB09B11-1A	SB31A1-3C
SB09B11-1C	SB31A1-2A
SB08L1-6A	SB31A1-2C
SB08L1-6C	SB31A2-1A
SB12A1-1A	SB31A2-1C
SB12A1-1C	SB28A1-2A
SB12E2-1A	SB28A1-2C
SB12E2-1C	SB28A2-2A
SB20A1-2A	SB28A2-2C
SB20A1-2B	SB31A2-2A
SB24B1-1A	SB31A2-2B
SB24B1-1B	SB31A3-1A
SB24D1-1A	SB31A3-1B
SB24D1-1B	SB31A3-2A
SB25A1-1A	SB31A3-2B
SB25A1-1B	SB50A1-5A
SB28A1-1A	SB51B7-1A
SB28A1-1C	SB27E1-1A
SB28A2-1A	FB120898
SB28A2-1C	FB120998
SB31A1-1A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory report listed the SDG incorrectly as 98L122; the correct number is 98L122A.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

????.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L140

Reviewer: John D. Keith

Date Reviewed: 2/1-99

Sample Identification #	Sample Identification #
SB8LI-4A	SB12B6-1A
SB8LI-4C	SB12B6-1C
SB27E-1-1B	SB13I1-1A
SB27E6-1A	SB13I1-1C
SB27E6-1B	SB17A5-1A
SB27E7-1A	SB17A5-1C
SB27E7-1B	SB33A1-1A
SB27E8-1A	SB33A1-1B
SB27E8-1C	SB51I1-1A
SB50A1-6A	FB121098A
SB12B5-1A	FB121098
SB12B5-1C	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

SVOCs

The laboratory case narrative indicated that all QC requirements were met except for 2,4,6-Trichlorophenol in AS296 and AS312 had D% of 21.97 and 21.84.

Metals

The laboratory case narrative indicated that recoveries of aluminum and antimony in both MS/MSD and iron in MSD of sample L140-15 and recoveries of aluminum and

antimony in MS and antimony in MSD of sample L140-04 were out of the limits. All serial dilution results were within QC limits except vanadium and chromium in sample L140-21 (soil).

LCS/LCSD recovery of antimony in IPA001SL was 1% above limit but met QC criteria in duplicate analysis.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

No, the holding times for Mercury were missed as summarized in the following table:

Field ID	Sampling Date	Analysis Date	Holding Time Exceedance	Holding Time Criteria
All in SDG	12-10-99	1-8-98	1	28

The Mercury data for samples in SDG were qualified as J/UJ based on missed holding times.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBKL2S	Cadmium	0.315	Subset of IPA001SB
MBKL2S	Calcium	2.53	Subset of IPA001SB
MBKL2S	Iron	2.38	Subset of IPA001SB
MBKL2S	Nickel	0.904	Subset of IPA001SB
MBKL2S	Zinc	0.35	Subset of IPA001SB
MBLK1S	Calcium	2.68	None
MBLK1S	Chromium	0.714	None
MBLK1S	Iron	1.79	None
MBLK1S	Zinc	0.474	None
MBLK1W	Aluminum	0.0275	FB121098A, FB121098
MBLK1W	Calcium	0.672	FB121098A, FB121098
MBLK1W	Iron	0.00877	FB121098A, FB121098
MBLK1W	Manganese	0.00086	FB121098A, FB121098
MBLK1W	Silver	0.00604	FB121098A, FB121098

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1W	Vanadium	0.00485	FB121098A, FB121098
MBLK1W	Zinc	0.0134	FB121098A, FB121098

Field ID	Analyte	New RL	Qualification
SB8LI-4C	Nickel	3.48	U
SB27E8-1C	Nickel	3.66	U
SB12B5-1C	Nickel	3.21	U
SB12B6-1C	Nickel	3.9	U
SB13I1-1C	Nickel	2.43	U
SB17A5-1C	Calcium	0.167	U
SB17A5-1C	Nickel	3.15	U
SB51I1-1A	Cadmium	0.245	U
FB121098A	Aluminum	0.114	U
FB121098A	Calcium	0.38	U
FB121098A	Zinc	0.008	U
FB121098	Calcium	0.215	U
FB121098	Zinc	0.0056	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK2S	Antimony	121/120	80-120	1	30

Field ID	Analyte	Qualification
SB27E6-1A	Antimony	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB13I1-1A	Aluminum	135/186	80-120	8	20
SB13I1-1A	Antimony	74/72	80-120	2	20
SB13I1-1A	Iron	114/190	80-120	8	20
SB27E6-1A	Aluminum	136/115	80-120	3	20
SB27E6-1A	Antimony	75/71	80-120	5	20
SB13I1-1A	TOC	158	60-140		

Field ID	Analyte	Qualification
SB27E6-1A	Antimony	UJ
SB13I1-1A	Aluminum	J
SB13I1-1A	Antimony	UJ

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L164

Reviewer: John D. Keith

Date Reviewed: 2/3/99

Sample Identification #	Sample Identification #
SB13B1-1A	SB13J1-1C
SB13B1-1B	SB17B1-1A
SB13C1-1A	SB17B1-1C
SB13C1-1B	SB27A1-1A
SB13D1-1A	SB27A1-1C
SB13D1-1C	SB27B1-1A
SB13D1-2A	SBB1-1C
SB13D1-2C	SB27C1-1A
SB13D1-3A	SB27C1-1C
SB13D1-3C	SB27E3-1A
SB13E1-1A	SB27E3-1C
SB13E1-1C	SB27E4-1A
SB13J1-1A	SB27E4-1C

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

Sample 98L164-26 (SB27E4-1C) was received mislabeled by the laboratory, per Ben Bertolotti (WCC) on 12-17-99, the chain of custody list the correct sample ID.

SVOC

MS/MSD samples for 2,4-dinitrophenol and hexachlorocyclopentadiene were outside QC criteria on batch 98L164-17.

Metals

MS/MSD were outside QC limits on sample 98L164-17 for aluminum, antimony, iron, and manganese.

Total Antimony

LCS was outside QC criteria for IPL058SL, which exceeds QC criteria by 4%.

Mercury

MS samples had high recoveries for samples 98L164-17.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Cadmium Iron	0.141 1.05	All in SDG
MBLK2S	Iron	0.902	All in SDG
MBLK1S	Lead	0.279	All in SDG

Field ID	Analyte	New RL	Qualification
SB13J1-1C	Cadmium	0.291	U
SB27E4-1C	Cadmium	0.231	U

No Qual., all associated samples were ND.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1S	Antimony	122/124	80-120	1	30

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB13D1-2A	Decachlorobiphenyl	179/159	25-143	No Qual, all data ND
SB13D1-3A	Tetrachloro-m-xylene	81/179	35-135	No Qual, all data ND
SB13J1-1A	Decachlorobiphenyl	129/150	25-143	Qual detects as (J)
SB17B1-1A	Decachlorobiphenyl	235/333	25-143	No Qual, all data ND
SB27B1-1A	Decachlorobiphenyl	130/147	25-143	No Qual, all data ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB27A1-1A	2,4-Dinitrophenol	22/20	25-161	12	30
SB27A1-1A	Hexachlorocyclopentadiene	7/3	31-135	4	30
SB27A1-1A	Aluminum	160/146	80-120	2	20
SB27A1-1A	Antimony	75/74	80-120	2	20
SB27A1-1A	Iron	175/69	80-120	10	20
SB27A1-1A	Manganese	122/107	80-120	6	20
SB27A1-1A	Mercury	157	75-125		

Field ID	Analyte	Qualification
SB27A1-1A	2,4-Dinitrophenol	UJ
SB27A1-1A	Hexachlorocyclopentadiene	UJ
SB27A1-1A	Antimony	UJ
SB27A1-1A	Manganese	J

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

Yes.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Qualifications mad based on surrogate data.

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L193

Reviewer: John D. Keith

Date Reviewed: 2/4/99

Sample Identification #	Sample Identification #
SB3A1-1A	SB16D1-3C
SB3A1-1C	SB50A1-7A
SB12D1-1A	SB50A1-8A
SB12D1-3B	SB12D1-3A
SB16B1-2A	SB16A1-1A
SB16B1-2C	SB16A1-1B
SB16D1-1A	SB12D1-2A
SB16D1-1C	SB12D1-2B
SB16D1-2A	SB16A1-2A
SB16D-1-2C	SB16A1-2B
SB16A1-3A	SB16A1-4A
SB16A1-3B	SB16A1-4B
SB12E1-1A	SB62A-2A
SB12E1-1C	SB6A2-3A
SB12B6-2A	SB6A2-3C
SB12B6-2B	SB6A2-1A
SB12B4-1A	SB6A2-1B
SB12B4-1C	SB6A3-1A
SB8L1-3A	SB6A3-1C
SB8L1-3B	SB6A1-1A
SB8L1-2A	SB6A1-1C
SB8L1-2C	SB5A2-1A
SB6A2-2A	SB5A2-1C
SB6A2-2C	FB121598
SB16D1-3A	FB121598A

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

SVOC

MS/MSD samples for Hexachlorocyclopentadiene was outside QC criteria on batch 98L193-03, 2,4-dinitrophenol, 2-chloronaphthalene, 2-nitrophenol, 4,6-dinitro-2-methylphenol, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, hexachlorocyclopentadiene, naphthalene, and nitrobenzene were outside QC criteria on batch 98L193-23, 4-dinitrophenol and hexachlorocyclopentadiene were outside QC criteria on batch 98L193-23. LCS recoveries were outside QC limits for 2,4-dinitrophenol, 3-nitroaniline, 4-nitroaniline, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and carbazole.

Two out of three prep batches were analyzed with medium level extraction; this was determined by the laboratory personnel's observation of the PCB extract's coloration.

PCB

Surrogate recoveries were outside QC limits of DCB in samples L193-07, 09, 11, 27, 28, 30, 32, and 36.

Metals

MS/MSD were outside QC limits on sample 98L193-03 for Aluminum and Iron, and on sample 98L193 for aluminum, antimony, and iron.

Total Antimony

LCS was outside QC criteria for IPA014SC, which exceeds QC criteria by 1%.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Calcium	4.52	All in SDG
MBLK2S	Calcium	2.26	All in SDG
MBLK3S	Cadmium	0.118	All in SDG
MBLK3S	Calcium	50.8	All in SDG
MBLK1W	Aluminum	0.0275	FB121598, FB121598A
MBLK1W	Calcium	0.672	FB121598, FB121598A
MBLK1W	Iron	0.00877	FB121598, FB121598A
MBLK1W	Manganese	0.00086	FB121598, FB121598A
MBLK1W	Silver	0.00604	FB121598, FB121598A
MBLK1W	Vanadium	0.00485	FB121598, FB121598A
MBLK1W	Zinc	0.0134	FB121598, FB121598A
MBLK2S	Lead	0.271	All in SDG

Field ID	Analyte	New RL	Qualification
SB6D1-3A	Calcium	0.136	ND
SB3A1-1A	Calcium	0.209	ND
SB16A1-3A	Calcium	0.121	ND
SB12E1-1A	Calcium	0.517	ND
SB12B6-2B	Calcium	0.3	ND
SB8L1-3A	Calcium	0.29	ND
SB8L1-2A	Calcium	0.39	ND
SB8L1-2C	Calcium	0.32	ND
SB6A2-2A	Calcium	0.28	ND
SB16D1-3A	Calcium	0.14	ND
SB50A1-8A	Calcium	0.15	ND
SB12D1-3A	Calcium	0.16	ND
SB16A1-1A	Calcium	0.40	ND
SB16A1-2A	Calcium	0.50	ND
SB16A1-2B	Calcium	0.263	ND
SB62A-2A	Calcium	0.27	ND
SB6A2-3A	Calcium	0.34	ND
SB6A2-3C	Calcium	0.13	ND
SB6A2-1A	Calcium	0.13	ND
SB6A3-1A	Calcium	0.49	ND
SB6A1-1A	Calcium	0.15	ND
SB6A1-1C	Calcium	0.26	ND
FB121598	Calcium	0.54	ND
FB121598	Nickel	0.0034	ND
FB121598	Zinc	0.022	ND
FB121598A	Calcium	0.034	ND
FB121598A	Nickel	0.003	ND
FB121598A	Zinc	0.005	ND

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	2,4-Dinitrophenol	121/92	30-151	27	20
MBLK1W	3-Nitroaniline	166/145	51-125	13	20
MBLK1W	4-Nitroaniline	151/129	40-143	15	20
MBLK1W	Benzo(a)pyrene	103-83	41-125	22	20
MBLK1W	Benzo(b)fluoranthene	106-85	37-125	22	20
MBLK1W	Benzo(g,h,i)perylene	106/85	34-149	85	20
MBLK1W	Dibenzo(a,h)anthracene	105/86	50-125	21	20
MBLK1W	Indeno(1,2,3-cd)pyrene	106/86	27-160	21	20
MBLK1W	Carbazole	312/273	25-175	13	20
MBLK2S	Antimony	119/121	80-120	2	30

Field ID	Analyte	Qualification

No Qual, all samples ND

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB16B1-2A	Decachlorobiphenyl	143/149	25-143	No Qual, all data ND
SB16D1-1A	Decachlorobiphenyl	155/157	25-143	No Qual, all data ND
SB16D1-2A	Decachlorobiphenyl	158/155	25-143	No Qual, all data ND
SB16A1-3A	Decachlorobiphenyl	147/155	25-143	No Qual, all data ND
SB16E1-1A	Decachlorobiphenyl	135/164	25-143	Qual, detects (J)
SB12B4-1A	Decachlorobiphenyl	133/157	25-143	Qual, detects (J)
SB8L1-3A	Decachlorobiphenyl	141/157	25-143	Qual, detects (J)
SB8L1-2A	Decachlorobiphenyl	140/158	25-143	Qual, detects (J)
SB50A1-7A	Decachlorobiphenyl	158/156	25-143	No Qual, all data ND
SB50A1-8A	Decachlorobiphenyl	158/157	25-143	No Qual, all data ND
SB16A1-1A	Decachlorobiphenyl	158/150	25-143	Qual, detects (J)
SB12D1-2A	Decachlorobiphenyl	164/158	25-143	No Qual, all data ND

Field ID	Surrogate	Recovery	Criteria	Action
SB16A1-4A	Decachlorobiphenyl	187/168	25-143	No Qual, all data ND
SB5A2-1A	Decachlorobiphenyl	105/206	25-143	No Qual, all data ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12D1-1A	Hexachlorocyclopentadiene	9/18	31-135	18	30
SB16D-1-2C	2,4-Dinitrophenol	0/7	25-161	200	30
SB16D-1-2C	2-Chloronaphthalene	47/50	50-135	6	30
SB16D-1-2C	2-Nitrophenol	32/38	34-135	19	30
SB16D-1-2C	4,6-Dinitro-2-Methylphenol	17/36	25-144	71	30
SB16D-1-2C	Bis(2-Chloroethoxy)methane	69/78	39-135	12	30
SB16D-1-2C	Bis(2-Chloroethyl)ether	32/34	34-135	7	30
SB16D-1-2C	Hexachlorocyclopentadiene	2/4	31-135	2	30
SB16D-1-2C	Naphthalene	38/41	40-135	7	30
SB16D-1-2C	Nitrobenzene	33/36	36-143	7	30
SB6A2-2A	2,4-Dinitrophenol	16/25	25-161	43	30
SB6A2-2A	Hexachlorocyclopentadiene	20/24	31-135	19	30
SB6A2-2A	PCB-1260	9/9-16/18	50-150	6/8	50
SB12D1-1A	Aluminum	152/120	80-120	8	20
SB12D1-1A	Iron	198/123	80-120	11	20
SB6A2-2A	Aluminum	159/182	80-120	3	20
SB6A2-2A	Antimony	70/72	80-120	3	20
SB6A2-2A	Iron	138/187	80-120	4	20
SB6A2-2A	Manganese	75/79	80-120	1	20
SB6A2-2A	Antimony	73/75	75-125	3	30
SB6A2-2A	TPH	-219/-233	65-135	6	30

Field ID	Analyte	Qualification
SB6A2-2A	PCB-1260	J
SB12D1-1A	Aluminum	J
SB6A2-2A	Antimony	UJ
SB6A2-2A	Nickel	J
SB6A2-2A	TOC	J

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Qualifications mad based on surrogate data.

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L193B

Reviewer: Robert Mallisee

Date Reviewed: 2/10/99

Sample Identification #	Sample Identification #
SB6A1-2A	SB6A2-1A
SB62A-2A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

PCB

Surrogate recoveries were outside QC limits on DCB for samples 98L214A-23 and 41 and the method blanks. These issues are discussed below in the following sections.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB6A2-2A	Decachlorobiphenyl	159/159	34-133	No Qual, all analytes ND
SB62A-2A	Decachlorobiphenyl	132/137	34-133	No Qual, all analytes ND
SB6A2-1A	Decachlorobiphenyl	150/148	34-133	No Qual, all analytes ND
MBLK3S	Decachlorobiphenyl	146/146	34-133	No Qual, all analytes ND
MBLK1S	Decachlorobiphenyl	146/156-155/160	34-133	No Qual, all analytes ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L214

Reviewer: Robert Mallisee

Date Reviewed: 2/10/99

Sample Identification #	Sample Identification #
SB1A1-1A	SB16C1-1A
SB1A1-1C	SB16C1-1C
SB1A1-2A	SB16C1-2A
SB1A1-2C	SB16C1-2C
SB3B1-1A	SB17A2-4A
SB3B1-1C	SB17A2-6A
SB5A1-1A	SB17A2-6C
SB5A1-1C	SB50A1-9A
SB7A1-1A	SB27D1-1A
SB7A1-1C	SB27D1-1C
SB16B1-1A	FB121898A
SB16B1-1C	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

SVOC

Pentachlorophenol in DCC on 12/27/98 had D% greater than 20% during tuning and calibration. LCS recoveries were outside QC limits for hexachlorocyclopentadiene in LCS for water. MS recoveries were outside QC limits for 6 analytes and RPD were outside QC limits for 28 analytes.

Metals

MS/MSD were outside QC limits on sample 98L214-17 for aluminum, antimony, iron, and manganese.

Total Antimony

LCS acceptance criteria for sample IPA014SC was exceeded by 1%.

TRPH

MS/MSD recoveries were outside QC limits due to matrix interference.

These issues are discussed below in the following sections.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK2S	Calcium	4.52	All in SDG
MBLK1W	Aluminum	0.0275	FB1121898A
MBLK1W	Calcium	0.672	FB1121898A
MBLK1W	Iron	0.00877	FB1121898A
MBLK1W	Manganese	0.00086	FB1121898A
MBLK1W	Silver	0.00604	FB1121898A
MBLK1W	Vanadium	0.00485	FB1121898A
MBLK1W	Zinc	0.0134	FB1121898A
MBLK1S	Lead	0.264	All in SDG

Field ID	Analyte	New RL	Qualification
FB121898A	Calcium	0.126	U
FB121898A	Iron	0.0187	U
FB121898A	Zinc	0.0134	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1W	Hexachlorocyclopentadiene	35/39	41-125	11	20
MBLK2S	Antimony	119/121	80-120	2	30

Field ID	Analyte	Qualification
FB121898A	Hexachlorocyclopentadiene	UJ

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB5A1-1A	Decachlorobiphenyl	147/135	25-143	Qual, detects (J)
SB17A2-6A	Decachlorobiphenyl	126/150	25-143	Qual, detects (J)
SB50A1-9A	Decachlorobiphenyl	132/149	25-143	Qual, detects (J)
MBLK1W	2-Fluorobiphenyl	39	43-125	No Qual, only one fraction out.
MBLK1W	Decachlorobiphenyl	160/166-145/156	34-133	Qual, detects (J)
MBLK1S	Decachlorobiphenyl	150/149-146/144	34-133	Qual, detects (J)

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB17A2-4A	2,4-Dimethylphenol	32/57	35-149	57	30
SB17A2-4A	2-Chloronaphthalene	39/42	50-135	42	30
SB17A2-4A	Bis(2-Chloroethoxyl)methane	35/50	39-135	50	30
SB17A2-4A	Bis(2-Chloroethyl)ether	32/59	34-135	59	30
SB17A2-4A	Hexachlorocyclopentadiene	25/75	31-135	75	30
SB17A2-4A	Nitrobenzene	33/53	36-143	53	30
SB17A2-4A	22 additional SVOC analytes exceeded RPD				
SB17A2-4A	Aluminum	271/285	80-120	2	20
SB17A2-4A	Antimony	66/70	80-120	5	20
SB17A2-4A	Iron	293/116	80-120	14	20
SB17A2-4A	Manganese	320/94	80-120	57	20
SB6A2-2A	TRPH	-219/-233	65-135	6	30

Field ID	Analyte	Qualification
SB17A2-4A	Aluminum	J
SB17A2-4A	Iron	J
SB17A2-4A	Manganese	J

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Qualifications mad based on surrogate data.

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L214A

Reviewer: Robert Mallisee

Date Reviewed: 2/10/99

Sample Identification #	Sample Identification #
SB3B1-1A	SB50A1-9A
SB5A1-1A	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

PCB

Surrogate recoveries were outside QC limits on DCB for samples 98L214A-05 and 07 and the method blanks. These issues are discussed below in the following sections.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples

Field ID	Analyte	New RL	Qualification

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria

Field ID	Analyte	Qualification

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB63B1-1A	Decachlorobiphenyl	164/180	34-133	No Qual, all analytes ND
SB5A1-1A	Decachlorobiphenyl	151/171	34-133	No Qual, all analytes ND
MBLK1S	Decachlorobiphenyl	130/138	34-133	No Qual, all analytes ND
MBLK3S	Decachlorobiphenyl	142/145	34-133	No Qual, all analytes ND
MBLK1S	Decachlorobiphenyl	140/145-136/141	34-133	No Qual, all analytes ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98l232

Reviewer: Robert Mallisee

Date Reviewed: 2/9/99

Sample Identification #	Sample Identification #
SB8LI-8A	SB17A2-2A
SB8L1-8C	SB17A2-2C
SB9B2-1A	SB17A2-4C
SB9B2-1C	SB27E2-1A
SB12-3A	SB27E2-1B
SB12-3B	SB69-3A
SB13J1-1A	SB27E9-1A
SB13J1-1C	SB27E9-1C
SB15A1-1A	SB17A2-3C
SB15A1-1C	SB17A2-3A
SN17A2-1A	FB122298
SB17A2-1C	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

PCB

Surrogate recoveries were outside QC limits of TCX and DCB in sample 98L232-13T.

Metals

MS/MSD were outside QC limits on sample 98L232-07 for aluminum, antimony, cadmium, chromium, copper, iron, lead, manganese, and zinc.

These issues are discussed below in the following sections.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Cadmium	0.104	All in SDG
MBLK1S	Sodium	35.8	All in SDG
MBLK2S	Calcium	4.52	All in SDG
MBLK1W	Aluminum	0.0275	FB122298
MBLK1W	Calcium	0.672	FB122298
MBLK1W	Iron	0.00877	FB122298
MBLK1W	Manganese	0.00086	FB122298
MBLK1W	Silver	0.00604	FB122298
MBLK1W	Vanadium	0.00485	FB122298
MBLK1W	Zinc	0.0134	FB122298
MBLK1S	Lead	0.498	All in SDG

Field ID	Analyte	New RL	Qualification
SB8LI-8A	Sodium	96.3	U
SB8L1-8C	Cadmium	0.376	U
SB9B2-1A	Cadmium	0.457	U
SB9B2-1A	Sodium	127	U
SB9B2-1C	Cadmium	0.34	U
SB9B2-1C	Sodium	151	U
SB12-3A	Sodium	150	U
SB12-3B	Cadmium	0.0933	U
SB13J1-1A	Sodium	143	U
SB13J1-1C	Sodium	84.8	U
SB15A1-1A	Cadmium	0.158	U
SB15A1-1A	Sodium	132	U
SB15A1-1C	Sodium	118	U
SB17A2-1C	Cadmium	0.0798	U
SB17A2-2C	Sodium	131	U
SB27E2-1A	Cadmium	0.252	U
SB27E2-1A	Sodium	102	U

Field ID	Analyte	New RL	Qualification
SB27E2-1B	Cadmium	0.464	U
SB27E2-1B	Sodium	132	U
SB69-3A	Sodium	139	U
SB27E9-1A	Sodium	105	U
SB27E9-1C	Cadmium	0.242	U
SB27E9-1C	Sodium	126	U
SB17A2-3C	Sodium	179	U
SB17A2-3A	Cadmium	0.125	U
SB17A2-3A	Sodium	116	U
FB122298	Calcium	0.145	U
FB122289	Iron	0.00569	U
FB122289	Zinc	0.00857	U
SB15A1-1C	Lead	2.43	U

No Qual, all associated samples were ND.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK2S	Antimony	119/121	80-120	2	30

Field ID	Analyte	Qualification
SB9B2-1C	Antimony	J
SB12-3A	Antimony	J
SB13J1-1A	Antimony	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
MBLK1W	2-Fluorobiphenyl	39	43-125	No Qual, only one fraction out.
SB17A2-1ADL	Decachlorobiphenyl	136/155	25-143	Qual, detects (J)
SB17A2-2ADL	Tetrachloro-m-xylene	299/0	25-143	Qual, detects (J)

Field ID	Surrogate	Recovery	Criteria	Action
SB17A2-2ADL	Decachlorobiphenyl	353/579	25-143	Qual, detects (J)
SB27E2-1A	Decachlorobiphenyl	115/151	25-143	Qual, detects (J)
SB69-3A	Decachlorobiphenyl	111/151	25-143	No Qual, all data ND
FB122298	Decachlorobiphenyl	112/146	25-143	No Qual, all data ND

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB13J1-1A	Aluminum	142/162	80-120	2	20
SB13J1-1A	Antimony	69/66	80-120	3	20
SB13J1-1A	Chromium	69/72	80-120	3	20
SB13J1-1A	Copper	77/56	80-120	9	20
SB13J1-1A	Iron	-140/-24	80-120	9	20
SB13J1-1A	Manganese	82/75	80-120	2	20
SB13J1-1A	Zinc	76/77	80-120	0	20

Field ID	Analyte	Qualification
SB13J1-1A	Aluminum	J

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Qualifications mad based on surrogate data.

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L242

Reviewer: Robert Mallisee

Date Reviewed: 2/11/99

Sample Identification #	Sample Identification #
SB13F1-1A	SB13H1-1C
SB13F1-1C	SB13H1-1C

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

PCB

Surrogate recoveries were outside QC limits on TCX and DCB for sample 981232-13T.

Metals

Iron was detected in method blank sample MBLK1S.

Total Antimony

LCS was outside QC limits for Antimony on MBLK1S.

These issues are discussed below in the following sections.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?
Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Iron	0.902	All in SDG

Field ID	Analyte	New RL	Qualification

All analytes are higher than 5x detection.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
MBLK1S	Antimony	122/122	80-120	0	30

Field ID	Analyte	Qualification

All results were ND

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes.

Field ID	Surrogate	Recovery	Criteria	Action

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

Yes.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Field ID	Analyte	Qualification

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

Yes.

Were laboratory duplicate sample RPDs within criteria?

Yes.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 98L246 (EMAX)

Reviewer: Craig Johnson

Date Reviewed: February 18, 1999

Sample Identification #	Sample Identification #
SB13G1-1C	SB13G1-1A
SB9B9-1B	SB29A1-3A
SB9B3-1A	SB29A1-3C
SB9B3-1C	SB8J1-1A
SB12C1-1A	SB8J1-1C
SB12C1-1C	SB29A1-2A
SB12C1-2A	SB29A1-2C
SB12C1-2C	FB123098
SB8L1-9C	SB29A1-4A
SB40A1-1A	SB29A1-4B
SB13A1-1A	SB12C1-1AMS
SB13A1-1C	SB12C1-1AMSD

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Analytical data for SVOC, PCBs, total metals, mercury, total cyanide, TOC, and TPH were received.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated surrogate recoveries for PCBs and LCS recoveries for antimony were outside evaluation criteria. These issues are addressed in the appropriate sections below. No additional problems were noted in the laboratory case narrative. While not noted in the laboratory case narrative, review of the data indicated method blank contamination. This is addressed in the method blank section below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes. See table:

Blank ID	Analyte	Conc.	Assoc. Samples
MBLK1S	Calcium	4.52J (mg/kg)	All in SDG
MBLK1W	Cadmium	0.00245 (mg/L)	All in SDG
	Calcium	0.0286 (mg/L)	
	Cobalt	0.00743 (mg/L)	
	Iron	0.00634 (mg/L)	
	Magnesium	0.0602 (mg/L)	
	Manganese	0.00614 (mg/L)	
	Silver		
MBLK1S	CEC	0.506 mg/L	All in SDG

Field ID	Analyte	New RL	Qualification

The associated results were greater than 5x the values reported in the metals soil blank sample, therefore, no qualification of data was required. The values reported in the metals method blank for water samples were comparable to those values reported in the rinsate sample. Since the values were comparable and it was not determined if the contamination was due to method blank or rinsate blank data, no qualification of data was required. The soil samples associated with the rinsate sample were greater than 5x the values detected in the rinsate sample. In addition, the associated values reported in the CEC blank sample were greater than the value reported in the blank sample, no qualification of data was required.

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
IPA014SC	Antimony	119/121	80-120	2	30

Associated Antimony data reported as nondetect, no qualification required.

Field ID	Analyte	Qualification
NA		

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB9B3-1A	Decachlorobiphenyl	205/277	25-143	Assoc. data ND, no qual.
SB12C1-1A	Decachlorobiphenyl	131/272	25-143	Assoc. data ND, no qual.
SB23G1-1A	Decachlorobiphenyl	128/144	25-143	Assoc. data ND, no qual.
SB29A1-3A	Decachlorobiphenyl	131/146	25-143	Assoc. data ND, no qual.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes for PCBs, metals and cyanide.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12C1-1A	Aluminum	178/180	80-120	0	20
SB12C1-1A	Antimony	60/62	80-120	4	20
SB12C1-1A	Aluminum	256/292	80-120	2	20

Field ID	Analyte	Qualification
SB12C1-1A	Aluminum	J
SB12C1-1A	Aluminum	J

The above outlying MS recoveries for antimony were those using during the MS analysis by Method 6010. Since the samples were analyzed by 7041 and the MS

recoveries for Method 7041 were within criteria, no qualification of data was required.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

No.

Field ID	Analyte	Qual

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 99H003

Reviewer: Craig Johnson

Date Reviewed: August 25, 1999

Sample Identification #	Sample Identification #
SM-3	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated no anomalies with this SDG.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No.

Blank ID	Analyte	Conc.	Assoc. Samples
NA			

Field ID	Analyte	New RL	Qualification
NA			

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria
NA			

Field ID	Analyte	Qualification
NA		

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Not applicable for these analyses.

Field ID	Surrogate	Recovery	Criteria	Action
NA				

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

No.

Were MS/MSD recoveries within evaluation criteria?

NA.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No

Were laboratory duplicate sample RPDs within criteria?

NA

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes, acetone and methylene chloride data for sample SM-3 were qualified nondetect (U) based on professional judgement.

Field ID	Analyte	Qual
SM-3	Acetone	U
SM-3	Methylene chloride	U

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 7098-2738E

Reviewer: John D. Keith

Date Reviewed: January 27, 1999

Sample Identification #	Sample Identification #
SB13J1-1A	SB13J1-1C
SB17A2-4C	SB17A2-1A
SB17A2-1C	SB17A2-2A
SB17A2-2C	SB27E2-1A
SB27E2-1B	SB69-3A
SB15A1-1A	SB15A1-1C
SB17A2-3A	SB17A2-3C
SB27E9-1A	SB27E9-1C
FB122298	

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

The laboratory case narrative indicated the following:

SVOCs

- Samples SB17A2-1A, SB17A2-1C, SB27E2-1a, SB27E2-1B, SB69-3A and SB15A1-1A were re-analyzed due to internal standard suppression. The reanalysis data are indicated by the suffix "RE".

- Samples SB13J1-1A MS/MSD were analyzed multiple times due to internal standard suppression, although the unspiked aliquot did not. The narrative indicated that sample inhomogeneity may be the cause of the discrepancy with the sample and MS/MSD samples.

VOCs

- *"Some of the quant report concentrations do not match the form I's since the multiplier was calculated incorrectly in the instrument room. The correct multiplier has been manually edited on the quant reports and the form I's are calculated using the correct sample weights and percent moistures."*

The concentrations reported on the form I's were recalculated, and verified. These issues are not addressed further.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes:

Blank ID	Analyte	Conc.	Assoc. Samples
VBLKN2	Methylene chloride Acetone	1 14	SB13J1-1A, SB13J1-1C, SB17A2-4C, SB17A2-1A, SB17A2-1C, SB17A2-2A, SB17A2-2C, SB27E2-1B, SB69-3A, SB15A1-1A, B13J1-1AFMSD
VBLKN1	Methylene chloride	2	SB27E2-1A, SB13J1-1AFMS, SB15A1-1C, SB17A2-3A, SB27E9-1C, SB27E9-1A, SB17A2-3C
SBLKVQ	Benzoic acid Diethyl phthalate Di-n-butyl phthalate Bis(2-ethylhexyl) phthalate Di-n-octyl phthalate	51 µg/kg 7 26 30 5	All In SDG

Field ID	Analyte	New RL	Qualification
SB13J1-1A	Methylene Chloride	9	U
SB13J1-1A	Acetone	42	U
SB13J1-1C	Methylene Chloride	10	U
SB13J1-1C	Acetone	10	U
SB17A2-4C	Methylene Chloride	12	U
SB17A2-4C	Acetone	12	U

Field ID	Analyte	New RL	Qualification
SB17A2-1A	Methylene Chloride	10	U
SB17A2-1A	Acetone	38	U
SB17A2-1C	Methylene Chloride	9	U
SB17A2-1C	Acetone	24	U
SB17A2-2A	Methylene Chloride	10	U
SB17A2-2A	Acetone	26	U
SB17A2-2C	Acetone	55	U
SB17E2-1A	Methylene Chloride	10	U
SB17E2-1A	Acetone	20	U
SB27E2-1B	Methylene Chloride	10	U
SB27E2-1B	Acetone	12	U
SB69-3A	Acetone	40	U
SB15A1-1A	Methylene Chloride	12	U
SB15A1-1A	Acetone	11	U
SB15A1-1C	Methylene Chloride	10	U
SB15A1-1C	Acetone	10	U
SB17A2-3A	Methylene Chloride	10	U
SB17A2-3C	Methylene Chloride	10	U
SB27E9-1A	Methylene Chloride	8	U
SB27E9-1C	Methylene Chloride	10	U
SB13J1-1A	Benzoic Acid	360	U
SB13J1-1A	Di-n-butyl phthalate	360	U
SB13J1-1A	Bis(2-Ethylhexyl) phthalate	360	U
SB13J1-1C	Di-n-butyl phthalate	410	U
SB13J1-1C	Bis(2-Ethylhexyl) phthalate	410	U
SB13J1-1C	Di-n-octyl phthalate	410	U
SB17A2-4C	Di-n-butyl phthalate	340	U
SB17A2-4C	Bis(2-Ethylhexyl) phthalate	340	U
SB17A2-4C	Di-n-octyl phthalate	340	U
SB17A2-1A	Benzoic Acid	350	U
SB17A2-1A	Di-n-butyl phthalate	350	U
SB17A2-1A	Bis(2-Ethylhexyl) phthalate	350	U
SB17A2-1ARE	Di-n-butyl phthalate	350	U
SB17A2-1ARE	Bis(2-Ethylhexyl) phthalate	350	U
SB17A2-1C	Di-n-butyl phthalate	340	U
SB17A2-1C	Bis(2-Ethylhexyl) phthalate	340	U
SB17A2-1C	Di-n-octyl phthalate	340	U
SB17A2-1CRE	Di-n-butyl phthalate	340	U
SB17A2-1CRE	Bis(2-Ethylhexyl) phthalate	340	U
SB17A2-1CRE	Di-n-octyl phthalate	340	U
SB17A2-2A	Benzoic Acid	350	U
SB17A2-2A	Di-n-butyl phthalate	350	U
SB17A2-2A	Bis(2-Ethylhexyl) phthalate	350	U
SB17A2-2C	Bis(2-Ethylhexyl) phthalate	2000	U

Field ID	Analyte	New RL	Qualification
SB17A2-2C	Di-n-octyl phthalate	360	U
SB27E2-1A	Di-n-butyl phthalate	350	U
SB27E2-1A	Bis(2-Ethylhexyl) phthalate	350	U
SB27E2-1ARE	Di-n-butyl phthalate	350	U
SB27E2-1ARE	Bis(2-Ethylhexyl) phthalate	350	U
SB27E2-1B	Di-n-butyl phthalate	370	U
SB27E2-1B	Bis(2-Ethylhexyl) phthalate	370	U
SB27E2-1B	Di-n-octyl phthalate	370	U
SB27E2-1BRE	Di-n-butyl phthalate	370	U
SB27E2-1BRE	Bis(2-Ethylhexyl) phthalate	370	U
SB69-3A	Di-n-butyl phthalate	360	U
SB69-3A	Bis(2-Ethylhexyl) phthalate	360	U
SB69-3ARE	Di-n-butyl phthalate	360	U
SB69-3ARE	Bis(2-Ethylhexyl) phthalate	360	U
SB15A1-1ARE	Di-n-butyl phthalate	340	U
SB15A1-1ARE	Bis(2-Ethylhexyl) phthalate	340	U
SB15A1-1C	Di-n-butyl phthalate	340	U
SB15A1-1C	Bis(2-Ethylhexyl) phthalate	340	U
SB15A1-1C	Di-n-octyl phthalate	340	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
L2337.D	Chloroethane	145	78-119		
	Acetone	225	29-156		
	Carbon Disulfide	125	78-119		
	1,1-Dichloroethene	125	78-122		
	1,1-Dichloroethane	120	80-119		
	1,2,-Dichloroethene (total)	128	84-114		
	Chloroform	130	83-114		
	1,2-Dichloroethane	135	80-123		
	2-Butanone	170	55-146		
	1,1,1-Trichloroethane	135	72-128		
	Carbon Tetrachloride	135	77-127		
	Bromodichloromethane	130	81-118		
	1,2-Dichloropropane	130	77-125		
	cis-1,3-Dichloropropene	120	74-111		
	Trichloroethene	130	82-114		
	Ethylbenzene	120	82-113		

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
N1699.D	Bromomethane	125	66-121		
	Vinyl Chloride	130	63-129		
	Chloroethane	165	78-119		
	Acetone	235	29-156		
	1,1-Dichloroethene	125	78-112		
	2-Butanone	260	55-146		
	Carbon Tetrachloride	75	77-127		
	1,2-Dichloropropane	135	77-125		
	2-Hexanone	200	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		
N1718.D	Bromomethane	135	66-121		
	Chloroethane	160	78-119		
	Acetone	235	29-156		
	2-Butanone	225	55-146		
	2-Hexanone	185	47-150		

Field ID	Analyte	Qualification
SB13J1-1A	Bromomethane	J*
SB13J1-1A	Vinyl Chloride	J
SB13J1-1A	2-Butanone	J
SB13J1-1A	Carbon Tetrachloride	UJ
SB13J1-1C	Carbon Tetrachloride	UJ
SB13J1-4C	2-Butanone	J*
SB13J1-4C	Carbon Tetrachloride	UJ
SB17A2-1A	2-Butanone	J
SB17A2-1A	Carbon Tetrachloride	UJ
SB17A2-1C	2-Butanone	J
SB17A2-1C	Carbon Tetrachloride	UJ
SB17A2-2A	2-Butanone	J*
SB17A2-2A	Carbon Tetrachloride	UJ
SB17A2-2C	2-Butanone	J*
SB17A2-2C	Carbon Tetrachloride	UJ
SB27E2-1A	2-Butanone	J*
SB27E2-1B	2-Butanone	J*
SB69-3A	2-Butanone	J*
SB69-3A	Carbon Tetrachloride	UJ
SB15A1-1A	2-Butanone	J*
SB15A1-1A	Carbon Tetrachloride	UJ
SB15A1-1C	2-Butanone	J*
SB17A2-3A	2-Butanone	J
SB17A2-3C	2-Butanone	J*
SB27E9-1A	2-Butanone	J*
SB27E9-1C	2-Butanone	J*

* Analyte previously qualified estimated (J) by the laboratory.

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

VOCs - Yes

SVOCs - No

Field ID	Surrogate	Recovery	Criteria	Action
SB17A2-1ARE	2-Fluorobiphenyl	122	30-115	none*
SB15A1-1ARE	Terphenyl-d14	144	18-137	none*

* No Qualification of the data was made since only one surrogate per SVOC fraction in each sample was outside evaluation criteria.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes, sample SB13J1-1A for VOCs and SVOCs.

Were MS/MSD recoveries within evaluation criteria?

Yes, with the exception of the following:

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB13J1-1A	Vinyl Acetate	152	16-144	5	20
	2-Butanone	156	55-146	12	20
	4-Methyl-2-Pentanone	170	58-141	8	20
	2-Hexanone	176	47-150	5	20
	1,1,2,2-Tetrachloroethane	130	76-118	4	20
SB13J1-1A	Pyrene	461	52-115		
	Benzo(a)anthracene	211	33-143		
	Chrysene	244	17-168		
	Benzo(b)fluoranthene	323	24-159		
	Benzo(k)fluoranthene	201	11-162		
	Benzo(a)pyrene	333	17-163		
	Indeno(1,2,3-cd) pyrene	295	01-171		
	Dibenzo(a,h) anthracene	209	01-227		
	Benzo(g,h,i) perylene	257	01-219		

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

See MS/MSD.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

??????

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.

A. Complete the following table:

Field ID	Analysis	Analyte	Dilution Factor
NA			

Additional Qualifications

Were additional qualifications applied?

Yes.

Field ID	Analyte	Qual
SB17A2-3A	Acetone	U
SB17A2-3C	Acetone	U
SB27E9-1A	Acetone	U
SB27E9-1C	Acetone	U

Acetone data for the samples listed in the table were qualified at nondetect (**U**) based on professional judgement as a laboratory contaminant.

Stratford Army Engine Plant Data Review

Laboratory Work Group(s): 2738F

Reviewer: John D. Keith

Date Reviewed: 2-1-99

Sample Identification #	Sample Identification #
SB13F1-1A	SB29A1-4A
SB13F1-1C	SB29A1-4B
SB13H1-1A	SB12C1-1A
SB13H1-1C	SB12C1-1A
SB29A1-3A	SB12C1-1A
SB29A1-3C	SB12C1-1C
SB8J1-1A	SB12C1-2A
SB8J1-1C	SB12C1-2C
SB29A1-2A	SB8L1-9A
SB29A1-2C	SB8L1-9C
FB 123098	SB40A1-1A

Data Package Completeness

Were all items delivered as specified in the QAPP and COC?

Yes.

Laboratory Case Narrative

Were problems noted in the laboratory case narrative which are not discussed in subsequent sections?

SVOCs

Samples SB12C1-1C, SB13F1-1A, SB8J1-1C, SB29A1-4A, and SB29A1-4B were re-analyzed due to internal standard suppression. The reanalysis data are indicated by the suffix "RE".

VOCs

Samples SB8J1-1A and SB8L1-9A were analyzed twice due to having surrogates out of criteria and/or suppression of internal standard areas. Both analyses were reported since matrix interference was proven.

These issues are addressed in the appropriate sections below.

Holding Times

Were samples extracted/analyzed within QAPP limits?

Yes.

Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

Yes.

Blank ID	Analyte	Conc.	Assoc. Samples
VBLKN3	Methylene Chloride	0.9	SB13H1-1A, SB13H1-1C, SB29A1-1A, SB8J1-1C, SB29A1-2A, SB29A1-2C, SB29A1-4A
VBLKN4	Methylene Chloride Acetone 2-Butanone	2 14 3	SB13F1-1C, SB8J1-1ARE, SB29A1-4B, SB12C1-1A, SB12C1-1C, SB12C1-2A, SB12C1-2C, SB8L1-9A, SB8L1-9C, SB40A1-1A
VBLKOO	Methylene Chloride Acetone	2 2	FB 123098
VBLKN5	Methylene Chloride	3	SB8L1-9ARE
VBLKN6	Methylene Chloride Acetone 2-Butanone 4-Methylene-2-Pentanone 2-Hexanone	4 18 6 2 3	SB29A1-3A
SBLKZQ	Diethyl phthalate Di-n-butyl phthalate Butyl benzyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	0.3 2 0.1 0.3 0.2	FB123098
SBLKYQ	Diethyl phthalate Di-n-butyl phthalate Butyl benzyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	7 21 2 8 5	SB13F1-1A, SB13F1-1ARE, SB13F1-1C, SB13H1-1A, SB13H1-1C, SB29A1-3A, SB29A1-3C, SB8J1-1A, SB8J1-1A, SB8J1-1C, SB8J1-1CRE, SB29A1-2A, SB29A1-2C, SB29A1-4A, SB29A1-4ARE, SB29A1-4B, SB29A1-4BRE
SBLKAQ	Diethyl phthalate Di-n-butyl phthalate Bis(2-Ethylhexyl) phthalate Di-n-octyl phthalate	5 14 15 3	SB12C1-1A, SB12C1-1C, SB12C1-1CRE, SB12C1-2A, SB12C1-2C, SB8L1-9A, SB8L1-9C, SB40A1-1A

Field ID	Analyte	New RL	Qualification
SB13F1-1C	Methylene Chloride	13	U
SB13F1-1C	Acetone	15	U
SB13F1-1C	2-Butanone	6	U
SB13H1-1C	Methylene Chloride	11	U
SB29A1-3A	Acetone	25	U
SB29A1-3A	2-Butanone	12	U
SB8J1-1ARE	Acetone	37	U
SB8J1-1ARE	2-Butanone	14	U
SB8J1-1C	Acetone	29	U
FB 123098	Methylene Chloride	10	U
FB123098	Acetone	10	U
SB29A1-4B	Methylene Chloride	12	U
SB29A1-4B	Acetone	13	U
SB29A1-4B	2-Butanone	4	U
SB12C1-1A	Methylene Chloride	10	U
SB12C1-1A	Acetone	26	U
SB12C1-1A	2-Butanone	7	U
SB12C1-1C	Methylene Chloride	11	U
SB12C1-1C	Acetone	8	U
SB12C1-1C	2-Butanone	6	U
SB12C1-2A	Methylene Chloride	12	U
SB12C1-2A	Acetone	22	U
SB12C1-2A	2-Butanone	6	U
SB12C1-2C	Methylene Chloride	11	U
SB12C1-2C	Acetone	12	U
SB12C1-2C	2-Butanone	6	U
SB8L1-9A	Acetone	23	U
SB8L1-9A	2-Butanone	10	U
SB8L1-9C	Methylene Chloride	11	U
SB8L1-9C	Acetone	12	U
SB8L1-9C	2-Butanone	6	U
SB8L1-9ARE	Methylene Chloride	17	U
SB40A1-1A	Methylene Chloride	10	U
SB40A1-1A	Acetone	25	U
SB40A1-1A	2-Butanone	10	U
SB13F1-1A	Diethyl phthalate	350	U
SB13F1-1A	Di-n-butyl phthalate	350	U
SB13F1-1A	Bis(2-Ethylhexyl) phthalate	350	U
SB13F1-1ARE	Diethyl phthalate	350	U
SB13F1-1ARE	Di-n-butyl phthalate	350	U
SB13F1-1ARE	Bis(2-Ethylhexyl) phthalate	350	U
SB13F1-1C	Diethyl phthalate	380	U
SB13F1-1C	Di-n-butyl phthalate	380	U

Field ID	Analyte	New RL	Qualification
SB13F1-1C	Bis(2-Ethylhexyl) phthalate	380	U
SB13F1-1C	Di-n-octyl phthalate	380	U
SB13H1-1A	Diethyl phthalate	350	U
SB13H1-1A	Di-n-butyl phthalate	350	U
SB13H1-1A	Bis(2-Ethylhexyl) phthalate	350	U
SB13H1-1A	Di-n-octyl phthalate	350	U
SB13H1-1C	Diethyl phthalate	370	U
SB13H1-1C	Di-n-butyl phthalate	370	U
SB13H1-1C	Bis(2-Ethylhexyl) phthalate	370	U
SB13H1-1C	Di-n-octyl phthalate	370	U
SB29A1-3A	Diethyl phthalate	17	U
SB29A1-3A	Di-n-butyl phthalate	44	U
SB29A1-3C	Diethyl phthalate	1900	U
SB29A1-3C	Di-n-butyl phthalate	1900	U
SB8J1-1A	Diethyl phthalate	350	U
SB8J1-1A	Di-n-butyl phthalate	350	U
SB8J1-1A	Bis(2-Ethylhexyl) phthalate	350	U
SB8J1-1ARE	Diethyl phthalate	350	U
SB8J1-1ARE	Di-n-butyl phthalate	350	U
SB8J1-1ARE	Bis(2-Ethylhexyl) phthalate	350	U
SB8J1-1ARE	Di-n-octyl phthalate	350	U
SB8J1-1C	Diethyl phthalate	390	U
SB8J1-1C	Di-n-butyl phthalate	390	U
SB8J1-1C	Bis(2-Ethylhexyl) phthalate	390	U
SB8J1-1C	Di-n-octyl phthalate	390	U
SB8J1-1CRE	Diethyl phthalate	390	U
SB8J1-1CRE	Di-n-butyl phthalate	390	U
SB8J1-1CRE	Bis(2-Ethylhexyl) phthalate	390	U
SB8J1-1CRE	Di-n-octyl phthalate	390	U
SB29A1-2A	Diethyl phthalate	1400	U
SB29A1-2A	Di-n-butyl phthalate	1400	U
SB29A1-2C	Diethyl phthalate	380	U
SB29A1-2C	Di-n-butyl phthalate	380	U
SB29A1-2C	Bis(2-Ethylhexyl) phthalate	380	U
SB29A1-2C	Di-n-octyl phthalate	380	U
FB123098	Diethyl phthalate	10	U
FB123098	Di-n-butyl phthalate	10	U
FB123098	Butyl benzyl phthalate	10	
FB123098	Bis(2-Ethylhexyl) phthalate	10	U
FB123098	Di-n-octyl phthalate	10	U
SB29A1-4A	Diethyl phthalate	360	U
SB29A1-4A	Di-n-butyl phthalate	360	U
SB29A1-4A	Bis(2-Ethylhexyl) phthalate	360	U
SB29A1-4ARE	Diethyl phthalate	360	U

Field ID	Analyte	New RL	Qualification
SB29A1-4ARE	Di-n-butyl phthalate	360	U
SB29A1-4B	Diethyl phthalate	340	U
SB29A1-4B	Di-n-butyl phthalate	340	U
SB29A1-4B	Bis(2-Ethylhexyl) phthalate	340	U
SB29A1-4B	Diethyl phthalate	340	U
SB29A1-4B	Di-n-butyl phthalate	340	U
SB29A1-4B	Bis(2-Ethylhexyl) phthalate	340	U
SB29A1-4BRE	Diethyl phthalate	340	U
SB29A1-4BRE	Di-n-butyl phthalate	340	U
SB29A1-4BRE	Bis(2-Ethylhexyl) phthalate	340	U
SB29A1-4BRE	Di-n-octyl phthalate	340	U
SB12C1-1A	Diethyl phthalate	380	U
SB12C1-1A	Di-n-butyl phthalate	380	U
SB12C1-1A	Bis(2-Ethylhexyl) phthalate	380	U
SB12C1-1A	Di-n-octyl phthalate	380	U
SB12C1-1C	Diethyl phthalate	340	U
SB12C1-1C	Di-n-butyl phthalate	340	U
SB12C1-1C	Bis(2-Ethylhexyl) phthalate	340	U
SB12C1-1CRE	Diethyl phthalate	340	U
SB12C1-1CRE	Di-n-butyl phthalate	340	U
SB12C1-1CRE	Bis(2-Ethylhexyl) phthalate	340	U
SB12C1-1CRE	Di-n-octyl phthalate	340	U
SB12C1-2A	Diethyl phthalate	340	U
SB12C1-2A	Di-n-butyl phthalate	340	U
SB12C1-2A	Bis(2-Ethylhexyl) phthalate	340	U
SB12C1-2A	Di-n-octyl phthalate	340	U
SB12C1-2C	Diethyl phthalate	340	U
SB12C1-2C	Di-n-butyl phthalate	340	U
SB12C1-2C	Bis(2-Ethylhexyl) phthalate	340	U
SB12C1-2C	Di-n-octyl phthalate	340	U
SB8L1-9A	Diethyl phthalate	350	U
SB8L1-9A	Di-n-butyl phthalate	350	U
SB8L1-9A	Bis(2-Ethylhexyl) phthalate	350	U
SB8L1-9A	Di-n-octyl phthalate	350	U
SB8L1-9C	Diethyl phthalate	340	U
SB8L1-9C	Di-n-butyl phthalate	340	U
SB8L1-9C	Bis(2-Ethylhexyl) phthalate	340	U
SB8L1-9C	Di-n-octyl phthalate	340	U
SB40A1-1A	Diethyl phthalate	380	U
SB40A1-1A	Di-n-butyl phthalate	380	U
SB40A1-1A	Bis(2-Ethylhexyl) phthalate	380	U
SB40A1-1A	Di-n-octyl phthalate	380	U

Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

No.

A. Complete the following table:

LCS ID	LCS Compound	LCS Recovery	LCS Criteria	DCS RPD	RPD Criteria
N1742.D	Bromomethane	125	66-121		
	Chloroethane	160	78-129		
	Acetone	220	29-156		
	1,1-Dichloroethene	125	78-122		
	2-Butanone	230	55-146		
	1,2-Dichloropropane	130	77-125		
	2-Hexanone	180	47-150		
N1756.D	Bromomethane	130	66-121		
	Vinyl Chloride	130	63-129		
	Chloroethane	155	78-119		
	Methylene Chloride	115	83-114		
	Acetone	195	29-156		
	2-Butanone	245	55-146		
	Carbon Tetrachloride	70	77-127		
	2-Hexanone	190	47-150		
N1772.D	Bromomethane	130	66-121		
	Chloroethane	160	78-119		
	Methylene Chloride	115	83-114		
	Acetone	220	29-156		
	1,1-Dichloroethene	125	78-122		
	2-Butanone	245	55-146		
	Carbon Tetrachloride	70	77-127		
	Dibromochloromethane	80	81-121		
	2-Hexanone	180	47-150		
N1783.D	Bromomethane	130	66-121		
	Vinyl Chloride	130	63-129		
	Chloroethane	160	78-119		
	Methylene Chloride	130	83-114		
	Acetone	290	29-156		
	1,1-Dichloroethene	125	78-122		
	2-Butanone	260	55-146		
	1,2-Dichloropropane	135	77-126		
	2-Hexanone	200	47-150		
	1,1,2,2-Tetrachloroethane	120	76-118		
SBLKZQ	Benzoic Acid	0	01-474		
SBLKAQ	2-Chloronaphthalene	131	60-118		

Field ID	Analyte	Qualification
SB13F1-1C	Carbon Tetrachloride	UJ
SB13F1-1C	2-Hexanone	J
SB13H1-1C	2-Butanone	J
SB29A1-3C	Chloroethane	J
SB29A1-3C	1,1-Dichloroethene	J
SB29A1-3C	2-Butanone	J
SB8J1-1A	2-Butanone	J
SB8J1-1ARE	2-Butanone	UJ
SB8J1-1C	2-Butanone	J
SB29A1-2A	2-Butanone	J
SB29A1-2C	2-Butanone	J
SB29A1-4A	2-Butanone	J
SB29A1-4B	Carbon Tetrachloride	UJ
SB12C1-1A	Carbon Tetrachloride	UJ
SB12C1-1C	Carbon Tetrachloride	UJ
SB12C1-2A	Carbon Tetrachloride	UJ
SB12C1-2C	Carbon Tetrachloride	UJ
SB8L1-9A	Carbon Tetrachloride	UJ
SB8L1-9C	Carbon Tetrachloride	UJ
SB8L1-9ARE	1,1-Dichloroethene	J
SB8L1-9ARE	Carbon Tetrachloride	UJ
SB8L1-9ARE	Dibromochloromethane	UJ
SB40A1-1A	Carbon Tetrachloride	UJ
SB13F1-1A	Benzoic Acid	UJ
SB13F1-1ARE	Benzoic Acid	UJ
SB13F1-1C	Benzoic Acid	UJ
SB13H1-1A	Benzoic Acid	UJ
SB13H1-1C	Benzoic Acid	UJ
SB29A1-3A	Benzoic Acid	UJ
SB29A1-3C	Benzoic Acid	UJ
SB8J1-1A	Benzoic Acid	UJ
SB8J10-1ARE	Benzoic Acid	UJ
SB8J1-1C	Benzoic Acid	UJ
SB8J1-1CRE	Benzoic Acid	UJ
SB29A1-2A	Benzoic Acid	UJ
SB29A1-2C	Benzoic Acid	UJ
SB29A1-4A	Benzoic Acid	UJ
SB29A1-4ARE	Benzoic Acid	UJ
SB29A1-4B	Benzoic Acid	UJ
SB29A1-4BRE	Benzoic Acid	UJ
SB12C1-1C	Phenanthrene	J
SB12C1-1CRE	Phenanthrene	J
SB12C1-2A	Phenanthrene	J

Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

No.

Field ID	Surrogate	Recovery	Criteria	Action
SB8J1-1A	Bromofluorobenzene	66	74-121	No Qual
SB8J1-1ARE	Bromofluorobenzene	73	74-121	No Qual
SB8L1-9A	Toluene	127	81-117	No Qual
SB8L1-9A	Bromofluorobenzene	73	74-121	No Qual
SB8L1-9ARE	Toluene	126	81-117	No Qual
SB8L1-9ARE	Bromofluorobenzene	64	74-121	No Qual
SB29A1-4B	Terphenyl-d14	165	18-37	None*
SB29A1-4BRE	Terphenyl-d14	143	18-37	None*

No qualification of the data was made since only one surrogate per SVOC fraction in each sample was outside evaluation criteria.

Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples reported as part of this SDG?

Yes.

Were MS/MSD recoveries within evaluation criteria?

No.

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12C1-1A	Acetone	101/74	29-125	25	20
	Vinyl Acetate	88/159	16-144	1	20
	2-Butanone	181/176	55-146	3	20
	Carbon Tetrachloride	72/78	77-127	8	20
	Trichloroethene	65/59	82-114	10	20
	4-Methyl-2-Pentanone	172/183	58-141	6	20
	2-Hexanone	167/178	47-150	6	20
	Tetrachloroethene	76/77	78-118	1	20
	1,1,2,2-Tetrachloroethane	130/139	76-118	7	20

MS/MSD ID	Analyte	MS/MSD Recovery	MS Criteria	MS RPD	RPD Criteria
SB12C1-1A	2-Methylnaphthalene	107/113	36-112	5	
	2-Chloronaphthalene	133/140	60-118	5	
	Dimethyl phthalate	127/133	01-112	5	
	Dibenzofuran	120/127	52-123	6	
	Diethyl phthalate	119/126	01-114	6	
	4-Bromophenyl-phenylether	140/140	53-127	0	
		140/140	54-120	0	
	Phenanthrene	139/139	1-118	0	
	Di-n-butyl phthalate	133/140	26-137	5	
	Fluoranthene	140/127	52-115	0	
	Pyrene	166/153	4-146	8	
	Di-n-octyl phthalate	180/167	24-159	8	
	Benzo(b)fluoranthene				

Field ID	Analyte	Qualification

As noted in Functional Guidelines, if MS/MSD recoveries for organic analyses are outside evaluation criteria, additional QC parameters should be reviewed to determine if qualifications are necessary. No qualification of the data was done based on MS/MSD data alone.

Lab Duplicate Results

Were lab duplicates samples collected as part of this SDG?

No.

Were laboratory duplicate sample RPDs within criteria?

NA.

Field Duplicate Results

Were field duplicates samples collected as part of this SDG?

No.

Sample Dilutions

Were samples diluted which exceed 10X QAPP limits?

No.